RAILWAY GUNS OF WORLD WAR II

STEVEN J. ZALOGA

ILLUSTRATED BY PETER DENNIS

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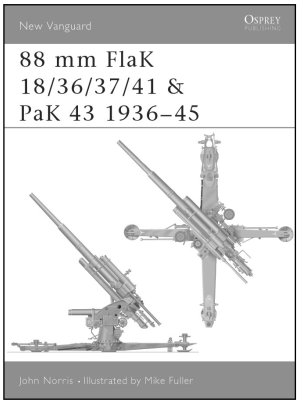
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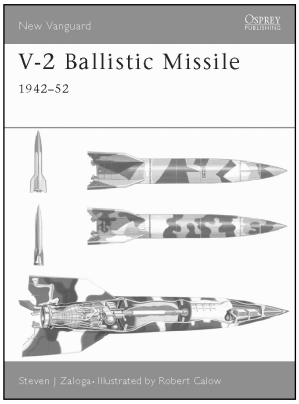
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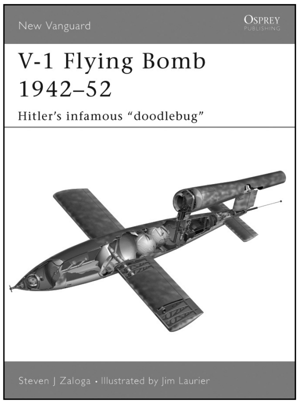
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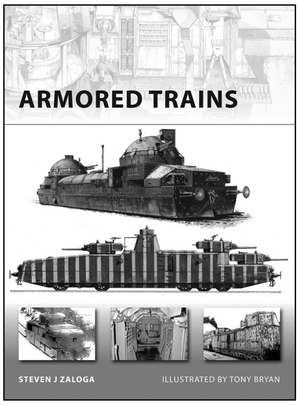
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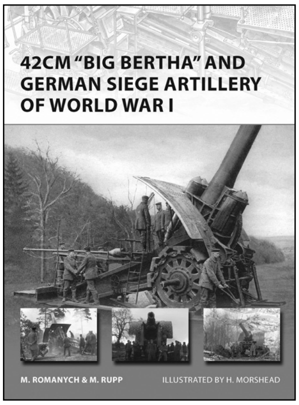
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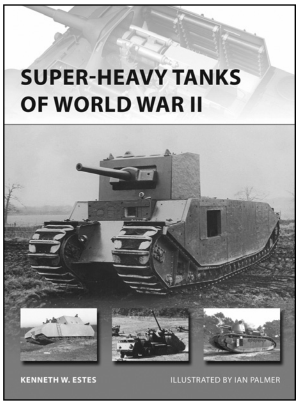
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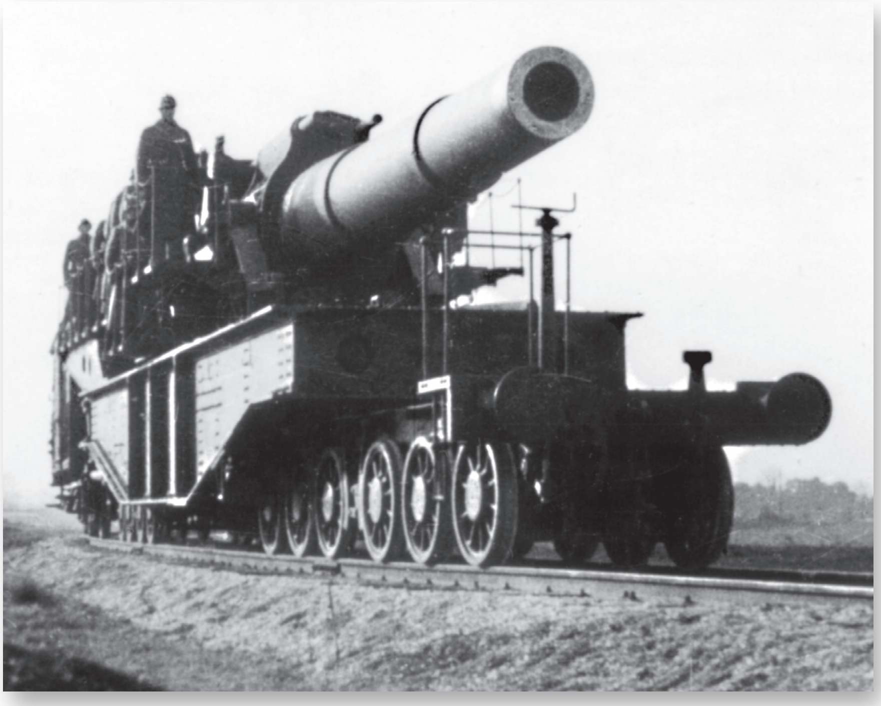

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Title page image: The 400mm modèle 1916 à berceau used a St Chamond carriage. Eight of these were used by the Germans as the 40cm H(E) 752(f) with batteries E.686 and E.693.

CONTENTS

INTRODUCTION 4

FRENCH RAILWAY GUNS 4

- French World War II Railway Guns Technical Characteristics

BELGIUM 8

GERMANY 8

- German World War I Railway Guns Retained after 1920
- German Railway Gun Modernization 1936–1939
- German Railway Gun Production 1939–1944
- German World War II Railway Guns Technical Characteristics
- German Railway Artillery in Combat

ITALIAN RAILWAY GUNS 27

SOVIET RAILWAY GUNS 31

- Soviet World War II Railway Guns Technical Characteristics
- Soviet Navy Coastal Defense Railway Batteries in 1941

FINLAND 41

JAPANESE RAILWAY GUNS 42

BRITISH RAILWAY GUNS 43

US RAILWAY GUNS 44

RAILWAY GUNS IN RETROSPECT 46

FURTHER READING 47

INDEX 48

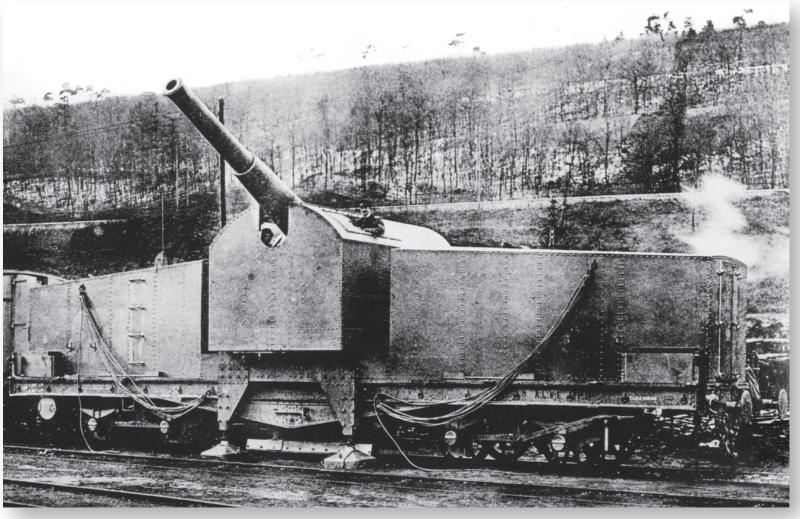
RAILWAY GUNS OF WORLD WAR II

INTRODUCTION

Railway guns were the most powerful land artillery of World War II. Railway artillery was developed as a means to transport and employ large and powerful guns that were difficult to move by more traditional means. They trace their origins back to improvised weapons used in the American Civil War in the early 1860s. Their heyday came in World War I after the advent of trench warfare. They were especially well suited to use against fortified defenses in static conditions. Their effectiveness diminished by World War II due to other alternatives such as aircraft, as well as the more fluid battlefield conditions of 1939–45. Nevertheless, they remained in service in significant numbers in a few armies. They still proved valuable as siege weapons in theaters where the battlefield had become static. In addition, they were used for coastal defense by several countries as an alternative to expensive fixed gun batteries. Railway guns largely disappeared after World War II, replaced by mechanized artillery and ballistic missiles. Due to limited space, this book deals only with railway guns used in the field artillery role; antiaircraft railway artillery is not covered. Also, small-caliber railway guns used in the direct-fire role have already been covered in an earlier book in this series on armored trains.

FRENCH RAILWAY GUNS

After a shaky start, the French army built the largest and most innovative arsenal of railway guns in the Great War. French firms such as Schneider-Canet had been proposing railway guns before World War I but these had been ignored by the French army and the few such weapons that were completed were exported elsewhere. The neglect of heavy artillery became especially apparent after the mobile phase of the conflict ended and the campaigns turned to static trench warfare in 1915. In desperation, the French army began to adapt fortress guns, obsolete warship guns, and coastal artillery guns to railway mounts. As a result, French World War I railway artillery covered an extremely broad range of configurations, many of them slapdash but effective. Medium-caliber naval guns or coastal defense guns, typically in the 150mm range on pedestal mountings, offered all-azimuth fire and were classified as TAZ (Tout-azimuth) by the French army. The larger

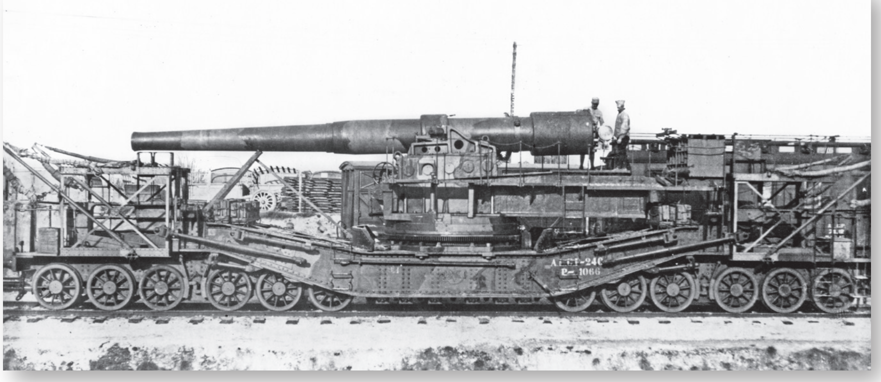


The most numerous French railway gun in service in 1940 was the 194mm TAZ modèle 1870/93 with 24 mobilized. It was also one of the more unusual in that it used an armored turret. The Germans took over nine of these, using them all in the coastal defense role as the 19cm K(E) 486(f). The Italians also received a dozen after the armistice.

calibers required heavier mounts, and various approaches were taken. Schneider favored the *affût à glissement*, or sliding mount. The gun frame had a series of friction pads on the bottom of the carriage, and the carriage could be lowered on to a recoil pad constructed of steel and wooden beams. When the gun fired, the recoil was absorbed by the friction between the skids and the ground pad. Batignolles developed an alternative in the form of a sliding top-carriage gun carriage mounted on wheels or skids that moved along a rail on the lower carriage with the recoil absorbed by friction and buffers. For some very heavy guns, the usual solution was to create a substantial ground anchorage under the carriage, with the recoil energy absorbed by the anchorage and not the gun carriage or rails. The French army classified these as *affûts à berceau*.

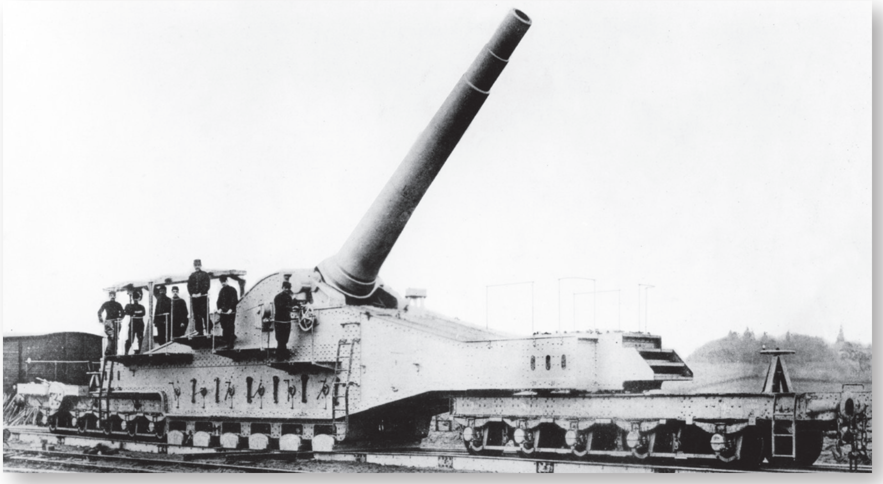
As gun recuperator systems became more efficient, rolling recoil absorption was adopted as a simpler approach. The wheels on the rail trucks had their brakes set, and when the gun fired, the entire railway gun recoiled backward, eventually stopping from the friction between the braked wheels and the rail. In most cases, the rails were reinforced beforehand to better absorb the forces involved. Aiming these guns was a problem except for the all-azimuth types. The French army pioneered the "épi" track, a newly laid curved track section off the main railway line constructed specifically for the railway gun.

By the end of the Great War in 1918, the ALVF (Artillerie lourde sur voie ferrée) deployed some 548 guns in six regiments. Many of these were improvised using obsolete 19th-century guns, so after the armistice, most of the guns were scrapped. Some of the surviving guns, particularly those in the heavier calibers, underwent a modernization program when funds permitted. Only the 372e Regiment ALVF remained on active service in Mailly after



The 240mm TAZ modèle 1893/96 (Colonies) was so called to distinguish them from gun tubes retained by the navy (Marine). This all-azimuth St Chamond mount was popular for coastal defense, and all eight were taken over by the Kriegsmarine as the 24cm K(E) 558(f) and deployed in two four-gun batteries at St Nazaire and Narvik.

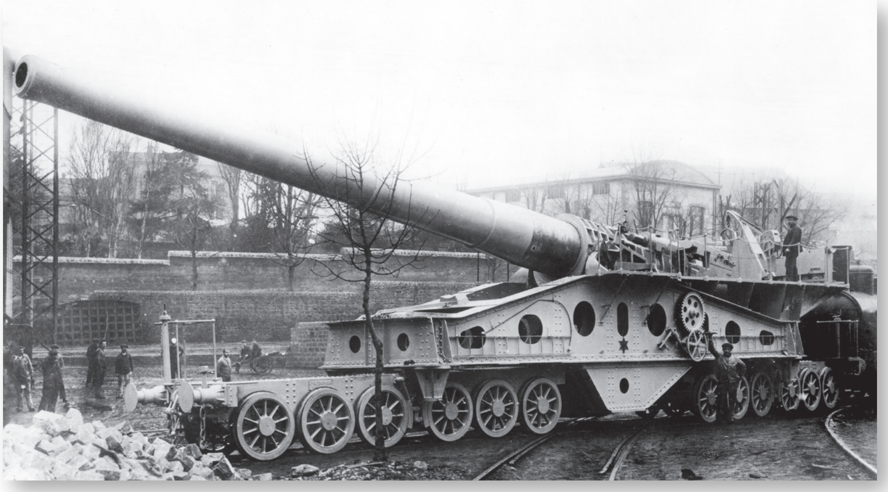
The 320mm à glissement modèle 1870 de 30 calibres was primarily used by the ALVF for counter-battery fire. They have the typical Schneider sliding recoil carriage. Nine of these were put into German service as the 32cm K(E) 651(f) and were used primarily on the Russian front by batteries E.691, E.693, and E.695.



1929. As can be seen from the list below, the French inventory in 1940 contained a great many obsolete weapons. The gun configurations were identified by abbreviations: TAZ (tous-azimuth), Gl. (affût à glissement) and berceau (affût à berceau).

French designation	Mobilized in 1939–40	German designation	Employed by Wehrmacht 1940–45
164mm TAZ modèle 93/96	4	16cm K(E) 453(f)	4
194mm TAZ modèle 70/93	24	19cm K(E) 486(f)	9+6*
240mm TAZ modèle 84/17	8	24cm K(E) 557(f)	3+2*
240 TAZ modèle 93/96	8	24cm K(E) 558(f)	8
274mm Gl. modèle 17	16	27.4cm K(E) 591, 592(f)	6
305mm Gl. modèle 06	3		
305mm Gl. modèle 06/10	3		
320mm Gl. modèle 70/30	8	32cm K(E) 651(f)	9
320mm berceau modèle 17	8		
340mm Gl. modèle 93	2		
340mm berceau modèle 12	6	34cm K(E) 674(f)	6
340mm G.l modèle 12	6		
370mm modèle 15	0	37cm H(E) 711(f)	4
400mm berceau modèle 16	10	40cm H(E) 752(f)	8
520mm modèle 16	0	52cm H(E) 871(f)	1
**Additional guns from Italians in September 1943*			

The French navy studied the potential use of railway guns for coastal defense on the Mediterranean coast in the 1920s, and in 1937–38, Schneider proposed a new 240mm gun for this role; it did not reach production. At the outbreak of the war, the army dusted off its aging inventory; of the 139 guns remaining, 106 were mobilized as detailed above. The ALVF regiments usually consisted of four artillery groups, each with two batteries of four guns. By the spring of 1940, there were three heavy railway gun regiments in service. Their individual groups were attached to the field armies with three groups attached to 3ème Armée, one to 5ème Armée, two to 8ème Armée facing Germany and two to the Armée des Alpes facing Italy. The railway gun groups were primarily deployed on the static fronts in Alsace-Lorraine supporting the Maginot Line and opposing the German Westwall fortified

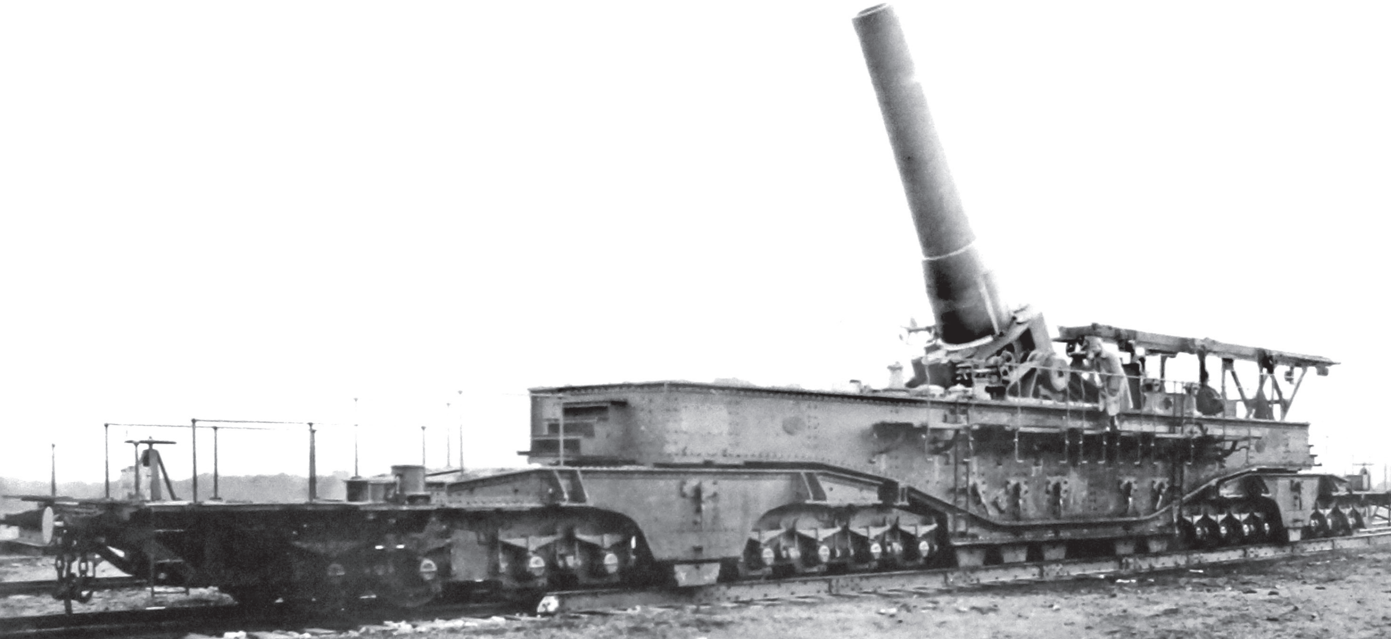


The 340mm modèle 1912 à berceau dit plate-forme used guns from the Normandie class on a St Chamond carriage. These were taken over by the Germans as the 34cm K(E) 674(f), with three serving with the Kriegsmarine battery at Plouharnel near Lorient.

zone. In the 1940 campaign, they were used to attack German troop concentrations, railway targets, and fortified positions. A battalion of the 372ème Régiment ALVF engaged Italian targets on the Alps front in June 1940. After the armistice, the German army took over the surviving French arsenal, eventually deploying 58 war-booty French railway guns in their own artillery units. Italy also took over 19 French railway guns.

French World War II Railway Guns Technical Characteristics

Designation	194mm TAZ mle 70/93	274mm Gl. mle 17	320mm Gl. mle 70	400mm berceau mle 16
Manufacturer	Schneider	Schneider	Schneider	St Chamond
Gun tube length (calibers)	30	30	31.6	22
Weight (metric tons)	65	155	163	140
Elevation (degrees)	10–40	0–40	0–40	0–65
Azimuth (degrees)	360	0	0	12
HE projectile weight (kg)	85	237	387	641
HE projectile velocity (m/s)	640	760	675	530
HE projectile range (km)	18.3	26	25	16



Only two of the super-heavy 520mm à deformation modèle 1916 were ordered by Gen. Joffre for the bombardment of enemy fortifications but were not delivered until after the Great War. The one surviving example was the heaviest piece in the ALVF, but not mobilized in 1940 while awaiting the delivery of 100 special projectiles to bombard the Westwall. The one complete example was taken over by the German army as the 52cm H(E) 871(f) and it was used in the bombardment of Leningrad in 1941 before blowing up in January 1942 due to a defective projectile.

BELGIUM

In 1916, the Belgian army acquired a single British BL 12in Howitzer Mk 1. During the German army retreat in 1918, four 28cm SKL/40 "Bruno" railway guns withdrew into the Netherlands, and these guns were later given to Belgium as war reparations. In addition, the Belgian army acquired several 17cm SKL/40 "Samuel" Eisenbahnkanone and at least one 24cm "Theodor" that had been left behind in 1918. When mobilized in 1939, the railway guns were concentrated in the 5e Régiment d'artillerie that was responsible for both coastal artillery and railway artillery. Its 2.Batallion (ALVF) had five batteries: the 4e and 6e with two 17cm SKL/40, the 7e and 9e with two 28cm SKL/40 and the 10e Batterie with the 12in Howitzer Mk 1. After the Belgian surrender on May 28, 1940, the German E.655 (E: Eisenbahnbatterie: Railroad Battery) took over two Bruno guns and E.674 took over a 24cm Theodor. The E.655 battery used the captured Belgian guns alongside their two 15cm K(E) guns in early June during the attacks on Brimont, Reims, and Amifontaine in France. One gun was wrecked when a projectile detonated in the gun tube. In 1941, E.721 was assigned two of the Belgian Bruno guns when assigned to the defense of the Gironde estuary; these remained in service into 1944.

GERMANY

Germany was one of the few countries to develop new railway guns after World War I, and it had the largest and most active railway artillery force of all of the combatants after the 1940 campaign. The new guns were needed since few guns survived from 1918. The Allied armies captured some German railway guns in the final months of 1918, dismantling them or removing them for technical evaluation. Following the armistice, the Allied control commissions monitored the destruction of most of the remainder, totaling 72 guns. Against French objections, Britain permitted the retention of 24 guns for coastal defense. The Germans surreptitiously retained a number of gun components. The standard artillery designation from this period, SKL, indicated a quick-firing gun (SK: Schnelladekanone) with a barrel length in calibers (L: Länge); Kst indicated Küsten (Coastal). In later years, the practice was to identify the guns as K(E) (Kanone Eisenbahn).

A

FRENCH AND BELGIAN RAILWAY GUNS OF THE 1940 CAMPAIGN

1: 280mm SKL/40, 2.Batallion (ALVF), 5e Régiment d'artillerie, Belgian Army, 1940

The 7e and 9e batteries of the 2.Batallion (ALVF) operated the four 280mm SKL/40 "Bruno" guns that had been interned in the Netherlands in 1918. They were finished in the standard Belgian "Kaki," an olive drab shade of the brownish color. Aside from the usual railway stenciling, they carried the national tri-color cocarde on the side as shown in the inset drawing.

2: 320mm à glissement Mle 1917, 2ème Groupe, 372ème Régiment d'Artillerie Lourde sur Voie Ferrée, 3e Armée, 1940

The 372ème RALVF was one of three French railway gun regiments active in the May 1940 campaign. It consisted of three groups, each with two or more batteries. Elements of the regiment used Disney cartoon characters on their guns, with the "Seven Dwarfs" from the film *Snow White and the Seven Dwarfs* being especially popular. Those that have been identified from photos include "Atchoum" (Sneezy: 340mm Mle 1893); "Simplet" (Dopey: 320mm Mle 1917); "Joyeux" (Happy: 320mm Mle 1917); "Grincheux" (Grumpy: 320mm Mle 1917) and "Timide" (Bashful: 274mm mle 1917). These guns were painted in overall French army dark green. Most of these guns were lost when they were isolated at the Culmont-Chalindrey railway station after the Luftwaffe had damaged the tracks on either side.

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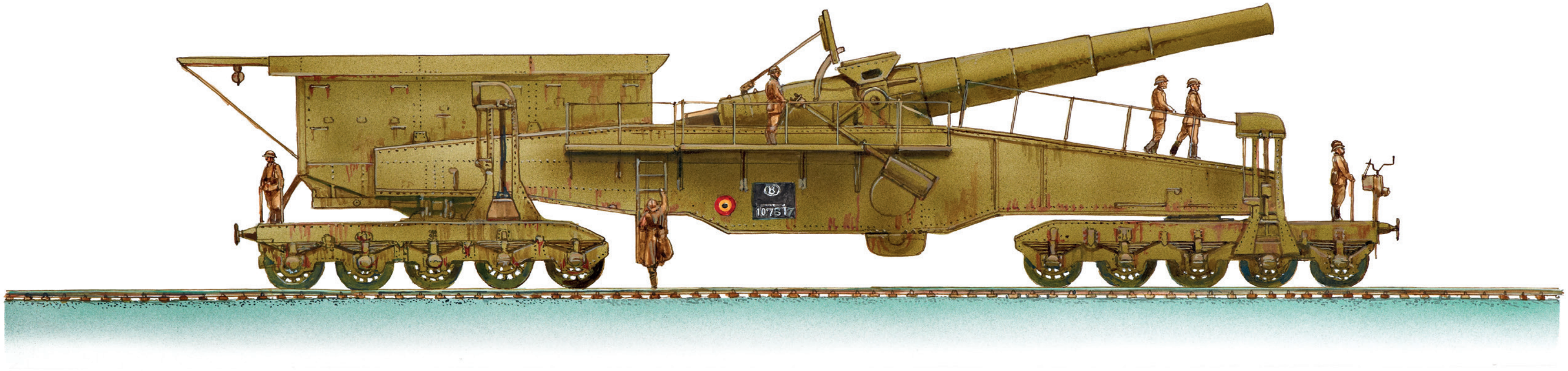

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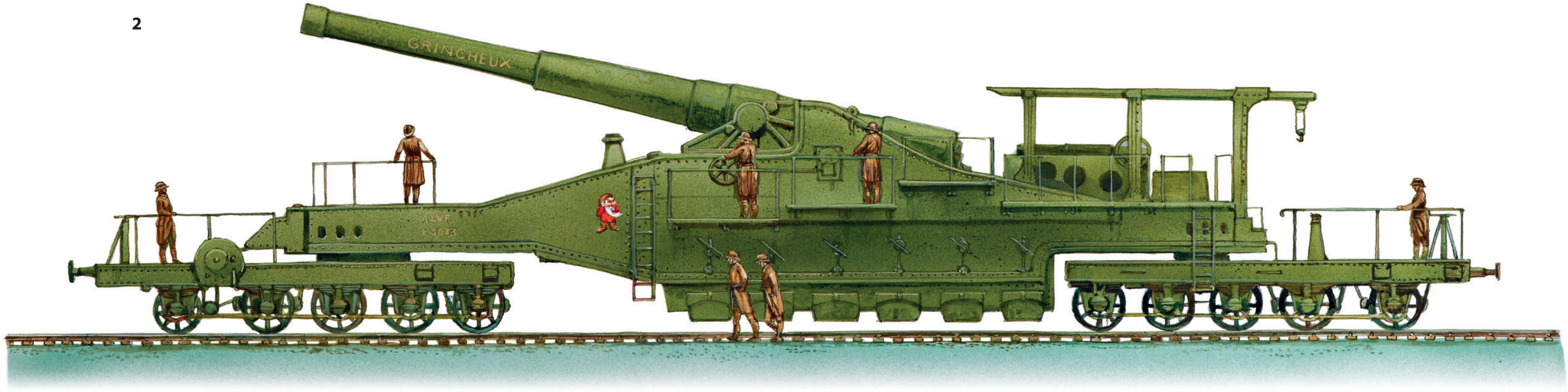
GRINCHEUX
ALVF
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The best-known image of German railway guns was this shot of the 21cm K12N that appeared on the cover of the wartime propaganda magazine *Signal*.

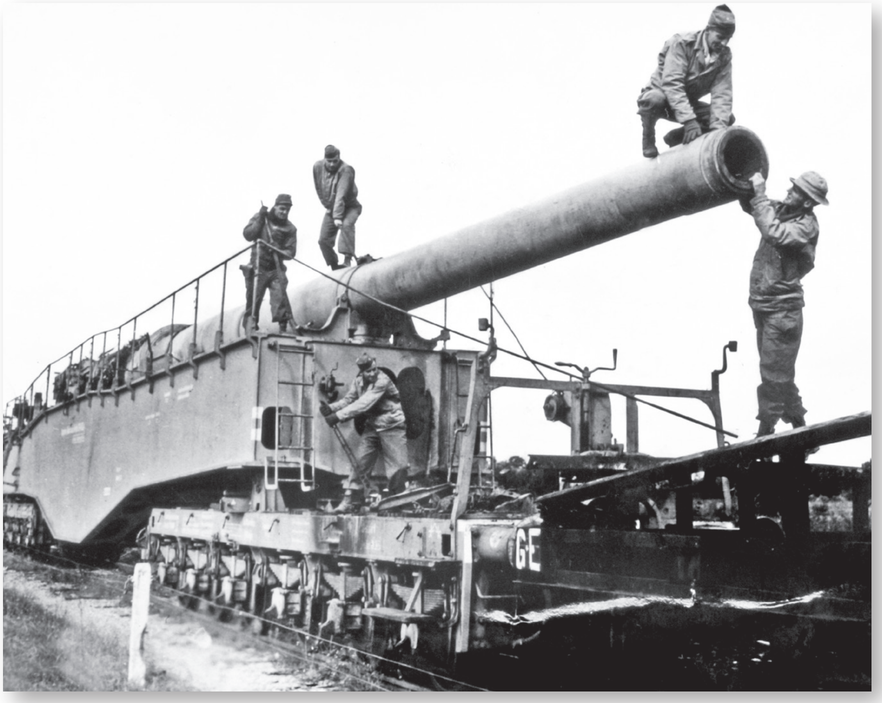
German World War I Railway Guns Retained after 1920

21cm SKL/40, SKL/45	4
24cm SKL/40	12
28cm SKL/40	8

Following the Nazi Party's rise to power in 1933 and its associated remilitarization program, a Sofort Programm (Emergency Program) was established to recreate the railway artillery force. This was a three-phase effort consisting of the modernization of the existing 24 guns, the reconstruction of eight railway guns using existing components, and a program to develop and manufacture a new generation of railway guns. The reconstructed guns were based on the residual force of railway guns left by the Allied control commissions, guns built from hidden components, and guns built from a combination of hidden components, spare ship guns, and new components.

German Railway Gun Modernization 1936–1939

15cm SKL/45	4
17cm SKL/40	6
24cm SKL/40	3
24cm KL/35	6
28cm SKL/45	3
28cm Kst.KL/45	2
28cm SKL/40	8



This 28cm K5 rail-gun was one of two of this type from Eisenbahn-Batterie.749 that arrived in 1944. Both were captured in the Montélimar pocket in the Rhône valley in late August 1944. This gun was dismantled as seen here and its carriage and its Vögele turntable were used by the US Army's 343rd Engineer Regiment to repair a bomb-damaged section of the Pont de l'Arc bridge near Aix.

The new Heeres Waffenamt (HWA: army ordnance division) construction program focused on four new weapons. The 21cm K12(E) program undertaken by Krupp in Essen was an effort to develop a new, very long-range gun as a contemporary replacement for the Paris Guns of World War I legend. The new gun designation K12 indicated a cannon capable of reaching 120km. The barrel was exceptionally long, L/158, which required exterior reinforcement of the forward portion of the tube. It incorporated a number of technical innovations, including special splined shells intended to reduce barrel erosion compared to more conventional projectiles. The prototype, later designated as K12V, was test fired in 1936. The carriage was reconfigured to provide more clearance for the breech under the carriage when used at high elevation, and the improved design emerged in 1938 as the K12N (N = neue). Only one of each configuration was manufactured. This type was used in gun duels between the Pas-de-Calais and southern England, and in at least one instance a round reached 88km, striking near Rainham in Kent. Although a significant technical achievement, the gun was not practical and General der Artillerie Karl Tholholte later described it as "little more than a toy."

German Railway Gun Production 1939–1944

	1939	1940	1941	1942	1943	1944	1945
Guns	2	4	12	15	3	2	0
Ammunition	3,663	7,183	13,640	5,961	5,922	1,152	263

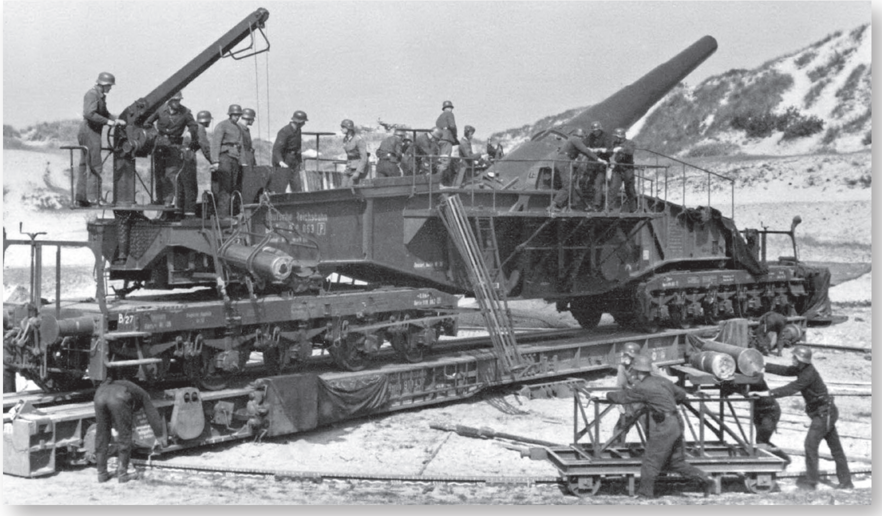
The most significant of the new designs was the 28cm K5(E) which, as the designation indicates, was intended to have a range of 50km. The design was jointly developed by Krupp in Essen and Hanomag in Hannover starting in 1934. The initial production example was completed in 1937, and an initial batch of eight guns was finished in 1940. The K5(E) proved to be the most modern and versatile gun in the railway artillery batteries and eventually 22 were completed, making it the most numerous single type. It was nicknamed the "schlanke Bertha" (Slender Bertha) in German service.

Initial firings led to a number of barrel cracks which the designers suspected might have something to do with the 10mm-deep rifling grooves. A new barrel with shallower 7mm grooves was produced which did seem to solve the problem; these were sometimes called K5 Tiefzug 7mm. Although less frequent, barrel cracks continued to occur and in 1943, the improved K5 Vielzug tube was introduced.

A variety of improvements were developed for the K5(E) but none were adapted for use. A rocket-assisted projectile, the 28cm R Gr 4331, was put into production that extended the gun's maximum range to about 85km, though at a cost in accuracy. An alternative approach for range extension was the K5 Glatt project which used a new smooth-bore 31cm gun tube firing a sub-caliber, fin-stabilized arrow projectile (Pfeil Geschoss) with an effective range of about 120km. This was reaching the service stage when the war ended.

The vulnerability of railway guns to Allied fighter bombers led to some interest in adapting the K5(E) to mechanized transport. The K5 ERF (Eisenbahn Runden Feld) project considered breaking down the weapon into

A 28cm K(E) Kurze Bruno of E.690 on its Vögele turntable at Bredene on the Belgian coast near Ostend.

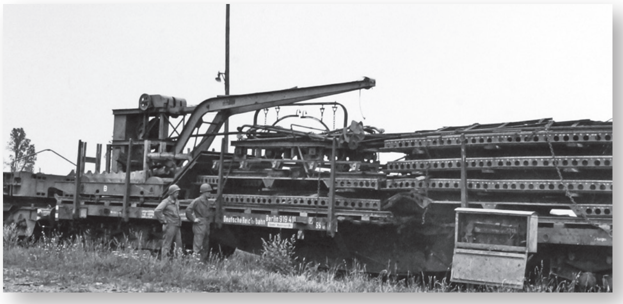


several components that could be carried cross-country using the Tiger tank chassis. This never reached the prototype stage.

The 28cm caliber was the most widely used in the Eisenbahnartillerie, but the older types relied on old Kriegsmarine warship tubes that were no longer in production. An effort was started in 1936 to adapt the current 28cm L/45 naval tube to the existing L/40 "Bruno" guns, and three of these were deployed by 1940 as the "Lange Bruno." The success of the 28cm program led to a 1938 effort to improve the existing arsenal of older 28cm "Bruno" railway guns with an improved and lengthened gun tube, called, not surprisingly, "Neue Bruno." This used an L/58 tube, shorter than that on the K5(E) but longer than the previous L/40 and L/45 tubes. Three guns were eventually adapted, one in 1940 and two in 1941.

The fourth prewar railway gun program was a Krupp program to adapt the 38cm SK C/34 naval gun to a railway mount. This gun was in use on the *Bismarck* and *Tirpitz* battleships, and a slow-down in warship construction led to the availability of several surplus tubes. This type was named the 38cm K(E) Siegfried, and the first of three examples was completed in 1942. Further production was curtailed by the interest to mount the

The Vögele turntable was standard equipment with many German railway gun batteries and was deployed on a standard railcar with integral crane. This one from E.722 was captured by the US Army at Torigni-sur-Vire, France on August 5, 1944.



B

GERMAN RAILWAY GUNS: WAR-BOOTY FRENCH GUNS

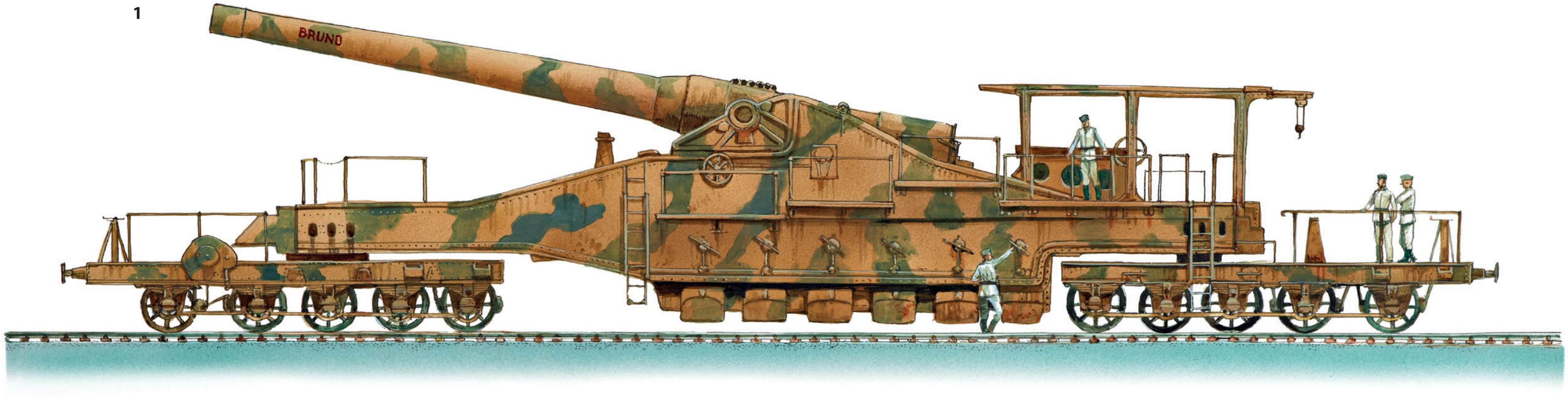
1: 27.4cm K(E) 592(f), E.692, Rhônetal, France, 1944

E.692 was one of three railway artillery batteries on the Südwall, the German coastal defense of the French Riviera coast in 1944. The battery covered the Rhône river estuary to the west of Marseille. Following the Operation *Dragoon* amphibious landings on August 15, 1944, the batteries were ordered to retreat up the Rhône valley, but they became trapped in the Montélimar pocket by Allied airstrikes against key bridges. This gun, named "Bruno," was painted in overall RAL 7028 Dunkelgelb (dark yellow) with bands of dark gray-brown.

2: 52cm H(E) 871(f), E.686, Krasnyi Bor, December 1941

This heavy railway howitzer was part of the railway gun force of Eisenbahn-Artillerie-Regiment z.b.V.679, which was assigned to the siege of Leningrad. It included three railway gun batteries (E.686, E.693, E.695). "Berta" was the only one of its type in German service and went into action on November 21, 1941. It was destroyed on January 5, 1942, when a round detonated inside the barrel. It was finished in overall RAL 7017 Dunkelgrau (dark gray) with a disruptive finish of whitewash.

1



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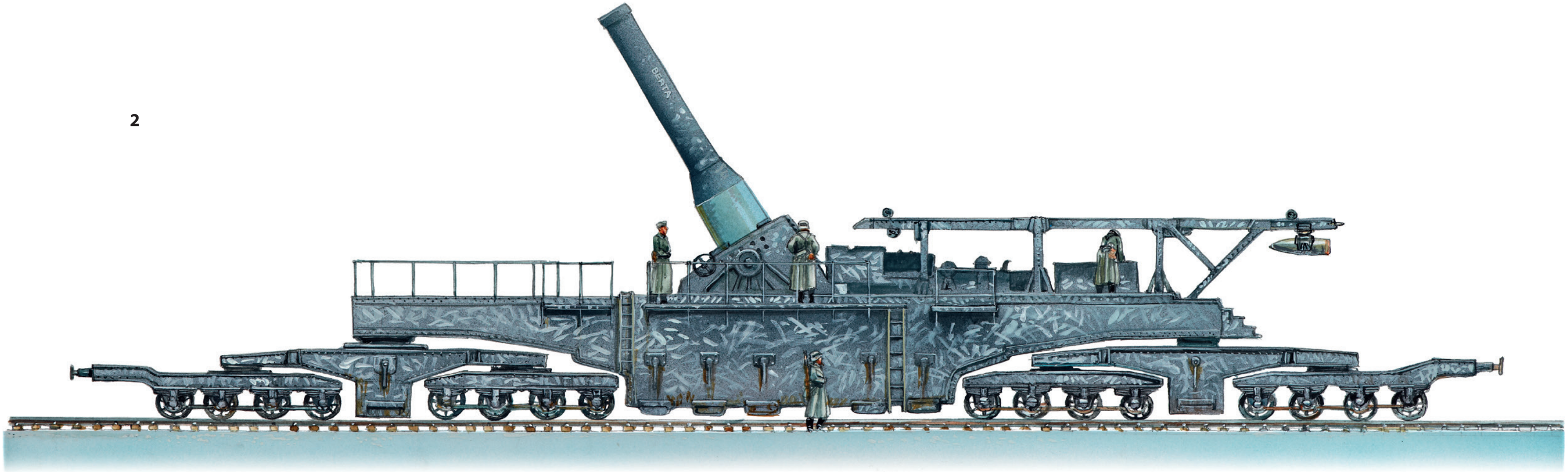


40cm SK C/34 gun on the same new carriage, but this project was stillborn.

Krupp had discussed the possibility of super-heavy guns for attacking the Maginot Line with the Waffenamt in the mid-1930s and had done preliminary studies on gun calibers ranging from 700 to 1,000mm. This was not taken too seriously by the Waffenamt on the recognition that such an enormous weapon would be hideously expensive and very difficult to deploy and operate. In 1936, Hitler visited the Krupp facility at Essen and was shown sketches of the design. Hitler was prone to enthusiasm for such megalomaniacal projects, and in 1937, Krupp was authorized to start work on a super-heavy rail gun, the 80cm K(E). The intention was to have the gun ready by 1940 in time for the campaign in France to bombard the Maginot Line. The technological challenge presented by such a weapon delayed its completion. It was a railway gun only in the narrowest sense of the word. It was delivered to the front by railway, broken down into two-dozen major sub-components. It was so enormous and heavy that it had to be assembled over two custom-built parallel railway tracks. Trial firings at Hillersleben began behind schedule in late 1940 and a completed prototype was sent to the Rügenwalde proving ground in 1941. The initial contract called for the delivery of two such guns in 1940–41, and a third in 1944. It would appear that no more than one such gun was assembled at any one time. Each gun cost about RM 7 million, although if one includes the capital investment in new factory equipment, as well as gun support equipment, actual costs were significantly more. To put this in some perspective, each gun was equivalent in cost to about 25 Tiger tanks.

The first gun was named "Dora," reputedly after the wife of Erich Müller, the head of the Krupp gun design bureau. The second gun, completed in August 1942, was dubbed "schwerer Gustav 2" (Heavy Gustav) after the head of the Krupp firm. One of the initial schemes was to use the gun to bombard Gibraltar from Spain as part of Operation *Felix*, but this floundered due to lack of Spanish support. Dora saw combat use in Crimea in the summer of 1942 as recounted below, the only combat use of this monster. The contract for the third gun, sometimes called "Langer Gustav," was modified to a new design using a longer 52cm-caliber barrel capable of firing the new long-range arrow projectiles. This gun was damaged in the factory in 1944 by Allied bombing raids and was never completed.

The 80cm railway gun quickly fell out of favor with the German artillery branch due to the enormous difficulty in deploying the weapon. Furthermore, it was not especially accurate, and never proved capable of hitting heavily fortified positions with any precision. Its downfall was hastened by the advent of a new class of bombardment weapon, the ballistic missile. The German A-4 ballistic missile, better known by its propaganda name "V-2," was a development sponsored by the German artillery force. The most significant proponent of missile weapons in the prewar Reichswehr was Lt. Col. Karl Becker, the head of the ballistics and munitions section of the army's Waffenamt. Becker had been involved in the development of the Paris Gun in World War I and saw rockets as a more advanced form of long-range artillery. On Becker's staff was a young artillery officer, Capt. Walter Dornberger, who would later lead the A-4 program. The specifications for the A-4 ballistic missile were chosen based on the performance of the Paris gun, which up to 1936 had been the most powerful weapon in the German army. The A-4 had a 1-ton payload and a range of 270km, twice the range and a hundred times the payload of the Paris gun. The army approved the start of the missile program in 1936 with a planned completion in 1943. Although there was a one-year delay in the program, the A-4 offered the German army a weapon that had more than five times the range of the 80cm gun. The A-4 did not offer precision accuracy, but it enabled the army to attack targets such as London that were far beyond the range of any conventional artillery weapon.

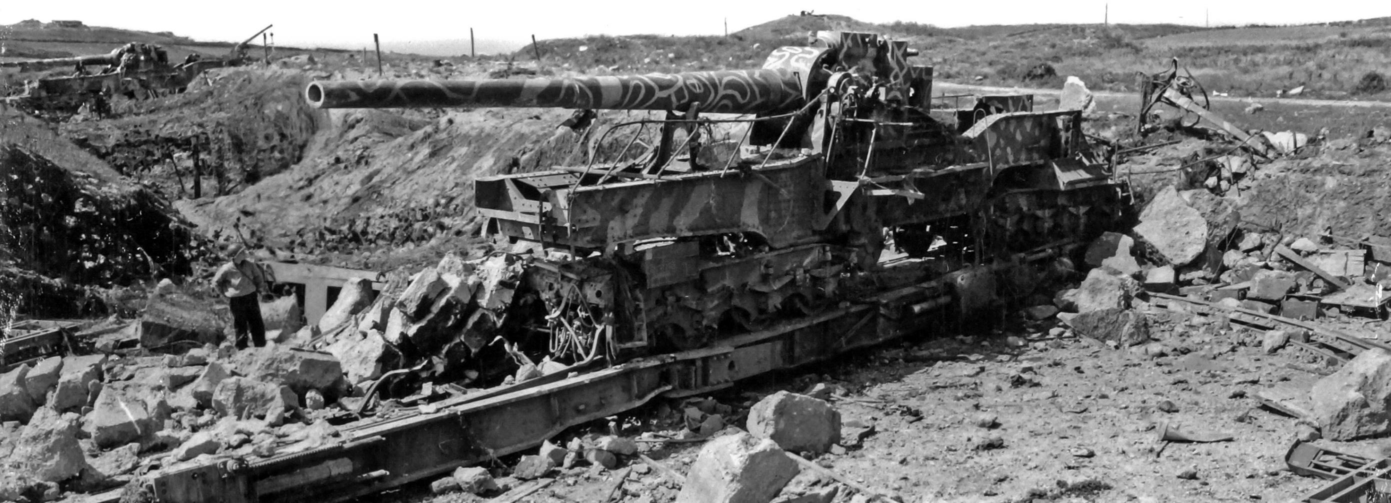
German World War II Railway Guns Technical Characteristics

Designation	**21cm K12(E)**	**28cm K5(E)**	**38cm K(E)**	**80cm K(E)**
Manufacturer	Krupp	Krupp + Hanomag	Krupp	Krupp
Number manufactured	2	22	4	2
Gun tube length (calibers)	158	76	52	40
Weight (metric tons)	317	218	287	1,350
Elevation (degrees)	25–55	0–50	10–52	10–65
Azimuth (degrees)	0.23	1.0	0	0
HE projectile weight (kg)	107.5	255	800	4,800
HE fill (kg)	8.0	25	65	700
HE projectile velocity (m/s)	1,625	1,120	820	820
HE projectile range (km)	115	62	42	48

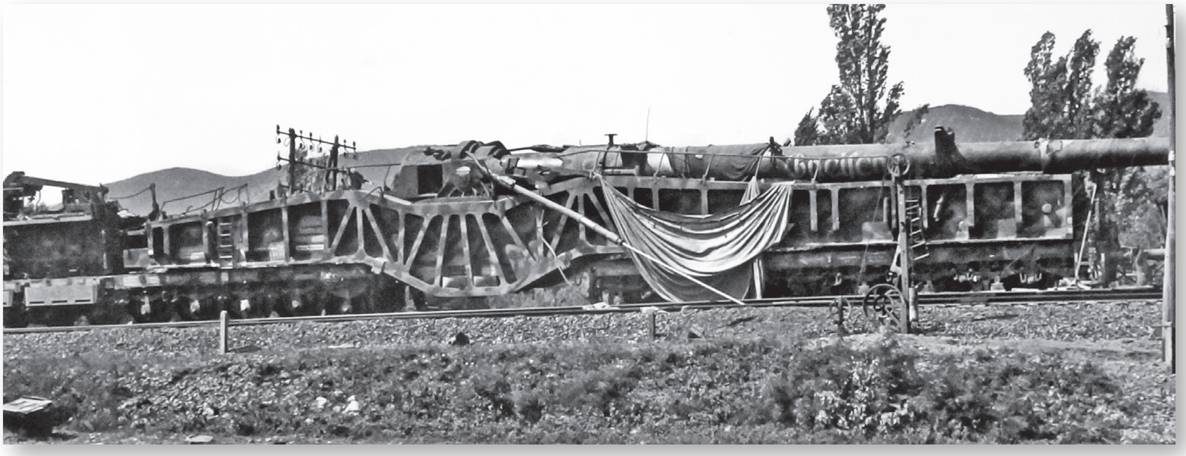
German Railway Artillery in Combat

The basic unit in the Eisenbahnartillerie (Railway artillery) was the Batterie, and this could vary from two to four guns plus the supporting equipment. While the batteries could operate independently, they tended to be subordinated to an Eisenbahn-Artillerie-Abteilung (Stab) which, as the name implies, was a battalion headquarters used to coordinate several batteries. These headquarters were used for batteries employed in the coastal defense role on the Atlantic Wall, or for specific campaigns. There were nine of these battalion headquarters organized during the war. A smaller number of Eisenbahn-Artillerie-Regiment (Stab) formed during the war, and typically, these headquarters coordinated two railway gun battalions.

A 28cm K5(E) battery with two guns had an organization strength of 230 men including five officers, 56 NCOs, and 169 enlisted men. It deployed in three sections (Zuge). The 1.Zug was the supply and support train consisting



A view of two of the 20.3cm K(E) of the coastal defense battery 3./HKAR.1262 emplaced at Auderville-Laye on the Jobourg peninsula to the west of Cherbourg. This battery was fortified with ammunition and personnel bunkers and had Vögele turntables for the guns as seen here after the June 28, 1944 air raids by B-26 medium bombers that disabled the guns. This is gun 919177, with another of the battery's four guns visible in the background to the left.



The most powerful railway guns stationed on the French Mediterranean coast were a pair of 38cm K(E) Siegfried railway guns of Eisenbahn-Batterie.698 stationed near Marignane. This gun was named Gneisenau, the other Scharnhorst. These were based on surplus naval guns from the Bismarck class of battleships. They were lost in late August 1944 in the Montélimar pocket.

of one locomotive and 31 cars. The 2.Zug and 3.Zug were the gun trains and were organized in a similar fashion with one locomotive each plus 20 cars. The battery also had 27 automotive vehicles of various types.

The first large-scale deployment of the German railway artillery was during the battles of France and the Low Countries in 1940. The Eisenbahn-Artillerie-Regiment.720 had two battalions with a total of five batteries. This unit was originally deployed in the Aachen area, and at the outset of the campaign was used to bombard Belgian fortifications. Several other separate batteries were used to provide fire support in the Saar, the Vosges, and Alsace, often against the Maginot Line.

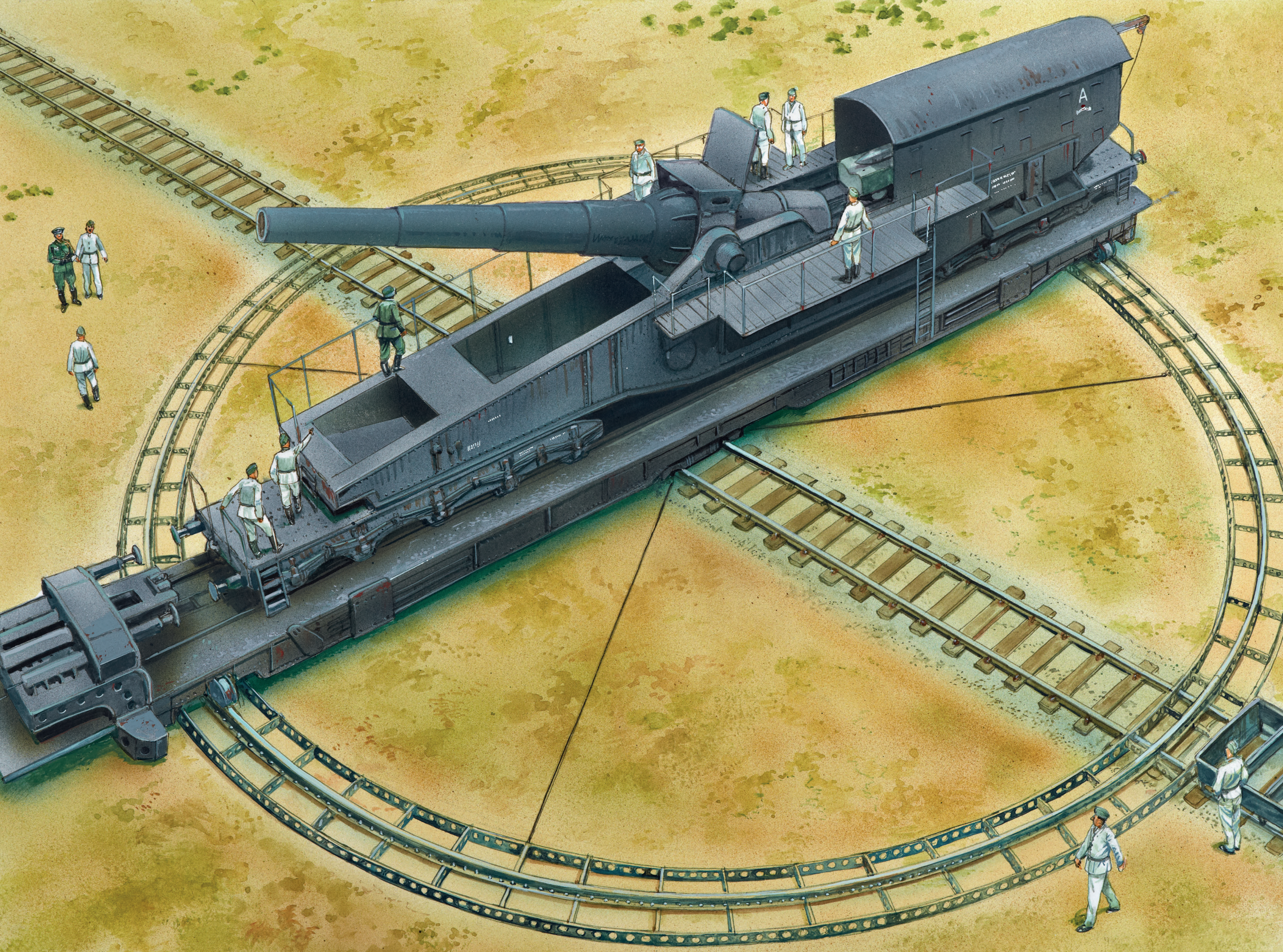
At the conclusion of the Battle of France, many of the existing batteries were sent to the Belgian and French coasts with the heaviest concentration in the Pas-de-Calais area for operations along the English Channel. Many of these batteries were emplaced with Vögele turntables that permitted quick and precise traverse. The Vögele turntable was a simplified version of the railway turntable found in many railyards. Its most significant difference was that it was easily transportable and relatively quick to deploy. Each turntable was carried on a railway flat-car, and it took about 48 hours to assemble one

C

28CM KURZE BRUNO K(E)(BEUTE), ON VÖGELE-DREHSCHEIBE, E.721, LE VERDON, FRANCE, 1944

This is one of the Belgian guns surrendered in 1940 and immediately put back into use. It is unclear whether they retained their original Belgian khaki color, but the supposition here is that they were repainted in the usual Dunkelgrau when refurbished before being issued to battery E.721. This was the "A" gun of the battery, and carried a small crest with the name "Rückert."

Like many batteries assigned to the coastal defense role, E.721 deployed its two railway guns on Vögele-Drehscheibe, a type of lightweight field turntable developed by the Joseph Vögele firm of Mannheim during World War I. This was a modular design and at least two lower carriage designs were manufactured with the shorter type to accommodate the older Bruno railway guns and longer type for the new and longer K5(E). The associated circular rail system was designed to be portable and it was carried on a single specialized railcar with a crane. It took about two days to deploy a railway gun on the Vögele turntable. The rail turning circle took about 24 hours to prepare, then it took another 24 hours to assemble the lower carriage, and roll the gun on to the carriage via a special ramp as seen to the lower right. The turntables were often assembled on top of a normal railway track to facilitate a transfer if necessary. However, many of the Atlantic Wall batteries were mounted on special concrete pads, sometimes in a reinforced concrete "kettle" position.


A

in the field. These turntables offered greater targeting flexibility than older techniques such as the use of curved tracks. Once the Channel duels began in earnest, the issue of protecting the railway guns arose. They were a large and conspicuous target, both for British coastal guns as well as RAF air raids. The usual method of protecting railway guns was to house them in railway tunnels. There were not enough tunnels available in the Pas-de-Calais area, so another option was developed, the "Dom bunker" ("cathedral bunker"), so named for its shape.[1] This was an elongated bunker made from steel-reinforced concrete that could resist direct bomb hits. Several of the gun batteries on the Pas-de-Calais had these bunkers constructed nearby.

German Railway Artillery on the Russian Front

In May 1941, the German railway artillery force was substantially re-deployed in support of Operation *Barbarossa*, the invasion of the Soviet Union. In total, three regimental and six battalion headquarters took part along with 20 railway gun batteries.

German railway artillery was most closely associated with the siege of Leningrad. Several batteries were under the direction of Eis.Art.Rgt.z.b.V.679 (Special Operations Railway Artillery Regiment). These batteries were deployed for attacks on the city itself as well as on other objectives in northern Russia including the neighboring Volkhov Front to the south of Leningrad. Railway artillery was used continually on the Leningrad Front from the autumn of 1941 until the Soviet January 1944 counter-offensive that finally forced the Wehrmacht to retreat.

The next heavy concentration of German railway artillery in Russia occurred in the summer of 1942 on the Crimean Front, especially the assault on the fortified naval base at Sevastopol. The Sevastopol defenses included several fortified naval gun batteries, and Hitler ordered the deployment of the new super-heavy 80cm K(E) Dora.

The Dora unit, schweren Artillerie Abteilung (E).672, had a complement of 1,420 troops including a headquarters, headquarters battery, fire control section, intelligence platoon, survey platoon, gun battery construction section, military police unit, two light Flak detachments, and the gun crew. The crew immediately attached to the gun numbered 500 men.

The battery location was at Bakhchysarai outside the city of Simferopol about 16km north of Sevastopol. During May 1942, the site was prepared and the tracks laid by about 1,500 conscripted Soviet workers, 1,000 German construction workers from Organization Todt, and a special team of 60 railway engineers and specialists from the Krupp factory. Gun assembly required a separate set of railway tracks for the operation of several Krupp-Ardelt overhead cranes. The Dora arrived in Crimea from the Rügenwalde proving ground in four detachments with over two dozen separate trains by June 1, 1942. The gun itself weighed about 1,320 tons when fully assembled.

Dora was first used in combat on June 5, 1942, firing 15 rounds against three targets: a Soviet garrison, Battery 30 of Maxim Gorkiy I's Bastion I, and Fort Stalin. Although this resulted in several large explosions of dirt and dust from the impact, only one round was suspected of hitting anything. The average miss distance was 300m. The Dora had two different types of projectiles, a 4.8-metric ton high-explosive projectile and 7-metric ton concrete-penetrating projectile. The concrete-penetrating projectile proved fearsomely destructive, able to penetrate nearly any existing concrete defense. However, the accuracy problems undermined the value of such a weapon. The next day's shoot with seven rounds against Fort Molotov was completely ineffective, though the average miss distance had been reduced to 235m. Later in the day, a large ammunition dump was attacked with several hits recorded. The shoot on Fort Siberia on June 11 registered three hits, but the final barrage of five rounds on June 17 against Maxim Gorkiy was without a hit. Dora fired all of its available 48 rounds totaling 360 metric tons in less than two weeks; according to Soviet accounts, without disabling any of its primary targets. Overall, the Dora represented about 1 percent of the artillery fired against Sevastopol, which totaled about 563,000 rounds weighing 26,300 tons. On the whole, the results were unimpressive considering the amount of effort expended. The gun was returned to Germany for a new barrel liner due to wear.

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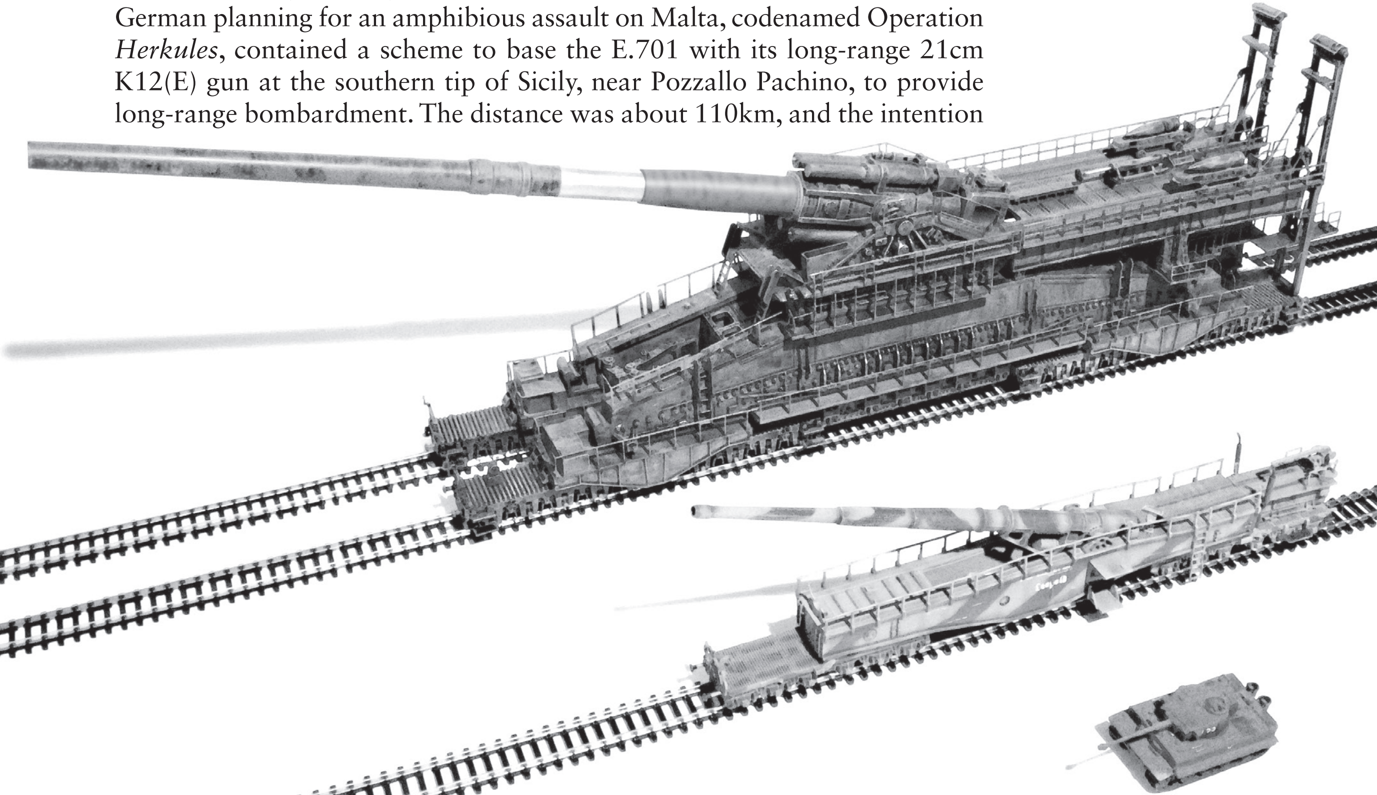
[1] Further details of the Dom bunker including an illustration can be found in: Steven J. Zaloga, *The Atlantic Wall (1): France* (Osprey Fortress 63: 2007), p.6-7.

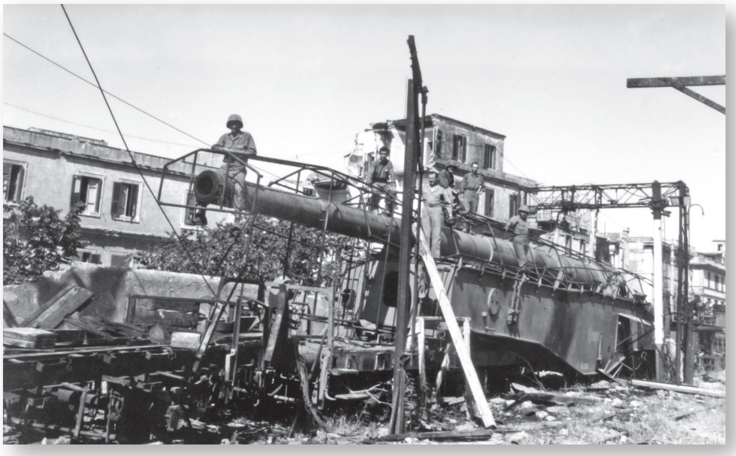
The Sevastopol campaign also saw the use of Eisenbahnbatterie.688 with three 28cm Lange Bruno that fired a further 897 rounds (475 tons), as well as two 28cm K5 guns. There were plans to deploy the Dora to the Leningrad Front in the autumn of 1942. A whole firing site was completed and the gun erected, but no rounds were fired. Some consideration was also given in August 1943 to employing both the Dora and Gustav in the bombardment of southern England but this never came to fruition, probably due to the vulnerability of the elaborate firing site to aerial bombardment. At least one German account suggests that serial production of the ammunition only amounted to 77 rounds in 1941–42, so it would seem that the army had largely given up on this impractical monster. As mentioned earlier, the A-4 ballistic missile became available in 1944, and this became the army's weapon of choice in the retaliation missions against England in the summer of 1944.

German Railway Artillery on the Mediterranean Front

German planning for an amphibious assault on Malta, codenamed Operation *Herkules*, contained a scheme to base the E.701 with its long-range 21cm K12(E) gun at the southern tip of Sicily, near Pozzallo Pachino, to provide long-range bombardment. The distance was about 110km, and the intention



This illustration provides a size comparison between the massive 80cm K(E) Dora at the top, a 28cm K5 in the center, and a Tiger I tank at the bottom.

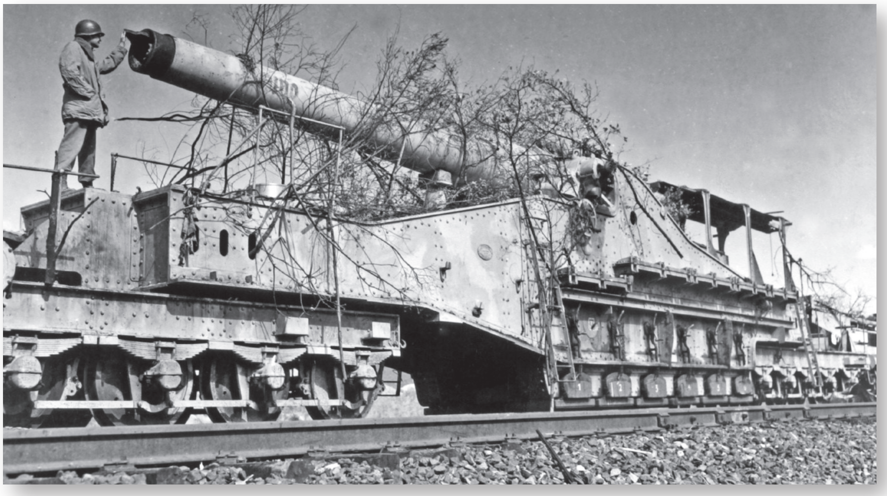


No doubt the most famous of the 28cm K5(E) guns were the "Anzio Annie" guns that bombarded the Anzio beach-head in early 1944. This shows Leopold of 2./E.725, trapped in the railyard at Civitavecchia on June 2, and captured by troops of the 168th Infantry Regiment, 34th Division on July 7, 1944.

was to manufacture about 160 rounds of long-range projectiles for the mission. In the event, the operation was cancelled.

In response to the Allied landing on Sicily in July 1943, three railway batteries from the Pas-de-Calais area were shifted to the Italian theater. These arrived too late to fire on the next Allied landing site at Salerno in September 1943. Following the Italian withdrawal from the Axis in September 1943, German troops took over two war-booty French 24cm K(E) 557(f) guns found in a depot near Rome. They were deployed with Batterie Erhardt, but a lack of firing pins delayed their combat use. When the Allies landed at Anzio in January 1944, the German army began deploying railway guns south of Rome to bombard the beach-head area. Transit of the guns was hampered by Allied bombing raids that had cut most of the railway bridges into the combat area.

Batterie Erhardt began firing on January 26, 1944, from north of Aprillia, about 18km to the Allied lines. A 28cm K5(E) gun named "Robert" from E.712 added to the bombardment on February 5, 1944, firing from a Vögele turntable erected in the Ciampino railyard, about 40km from the Allied lines. It was followed the next day by a 28cm K5(E) named "Leopold" from 2./E.725 deployed slightly to the west near Frascati. Both guns used tunnels in the area for protection from air attack. Besides the turntable, they also

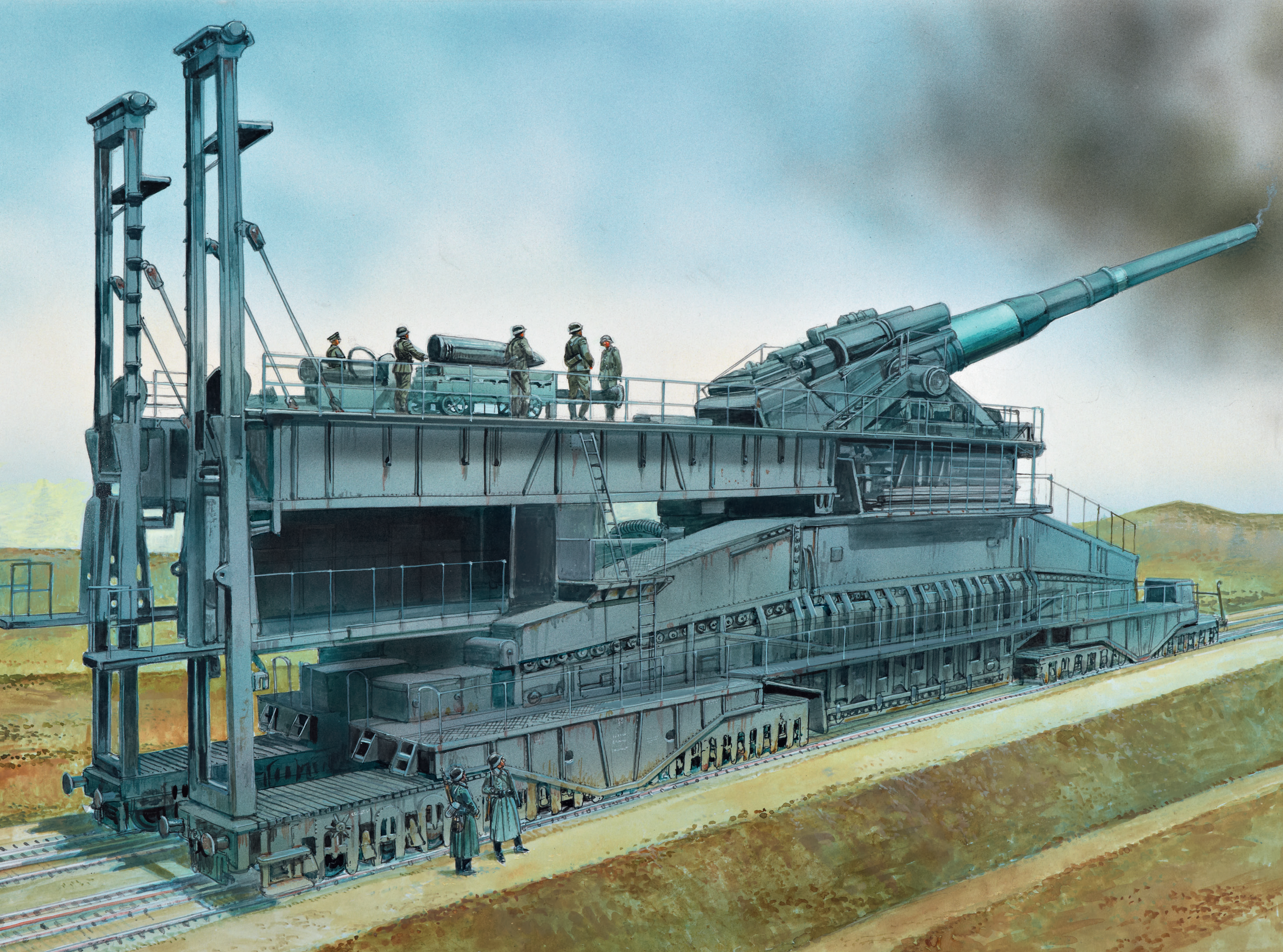


Bruno, a 27.4cm K(E) 592(f) gun of E.692 that had been stationed in Rhônetal on the French Mediterranean coast. It was lost in the Montélimar pocket near La Coucourde in late August 1944 when the battery retreated up the Rhône valley.

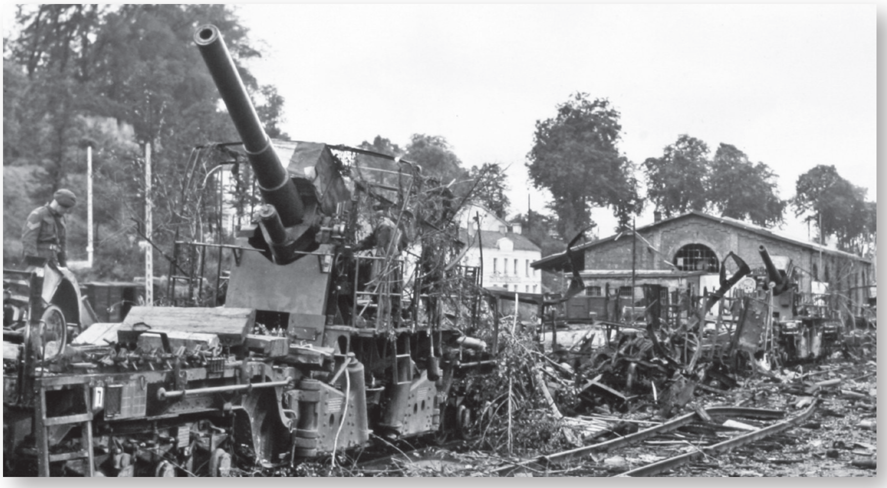
D

80CM K(E), DORA, SCHWERE ARTILLERIE ABTEILUNG (E).672, SEVASTOPOL, 1942

The Dora super-heavy railway gun saw only one combat deployment during the bombardment of the Soviet naval fortress at Sevastopol in 1942. It was finished in the usual overall Dunkelgrau scheme.



The E.655 was armed with these old 15cm SKL/40 railway guns in the Somme area in 1944 and these two guns were lost in early September in the Montreuil railyard when overrun by Canadian troops.

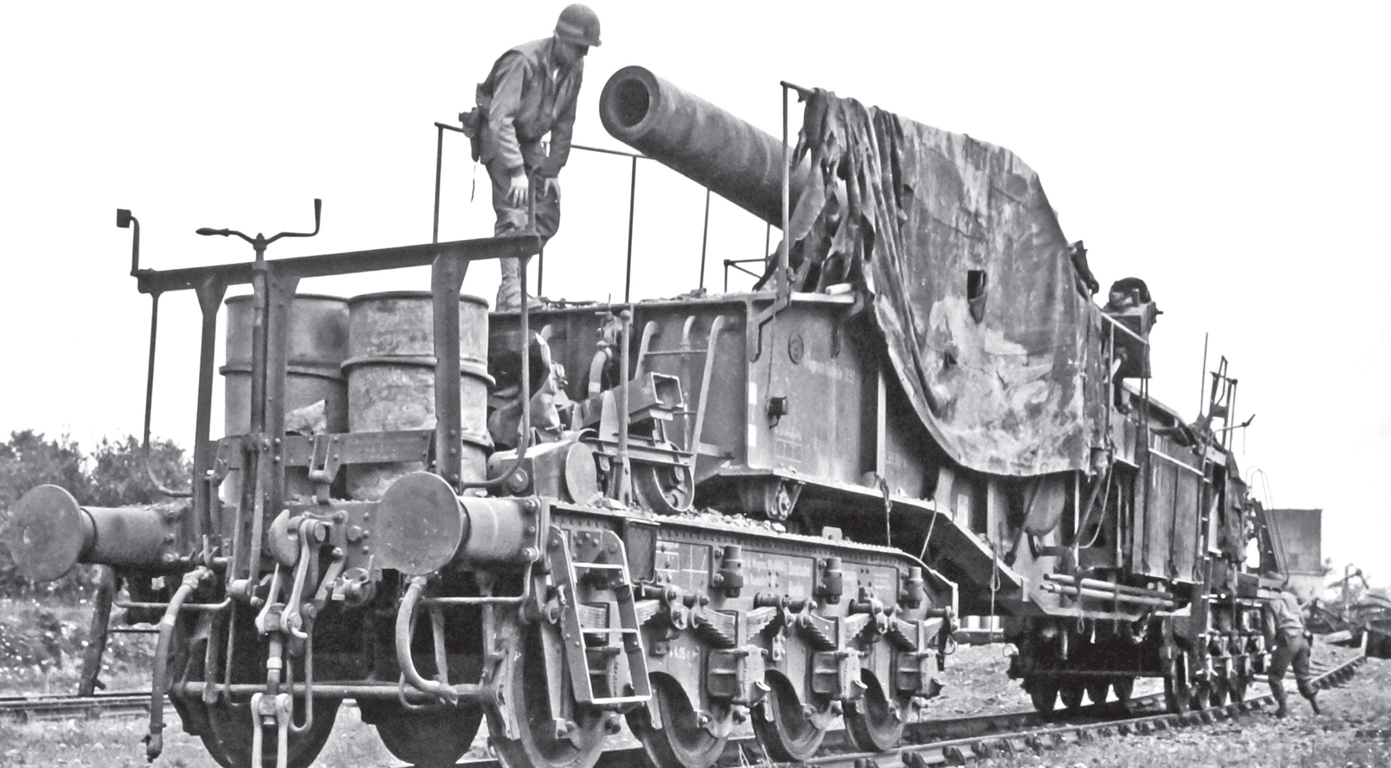


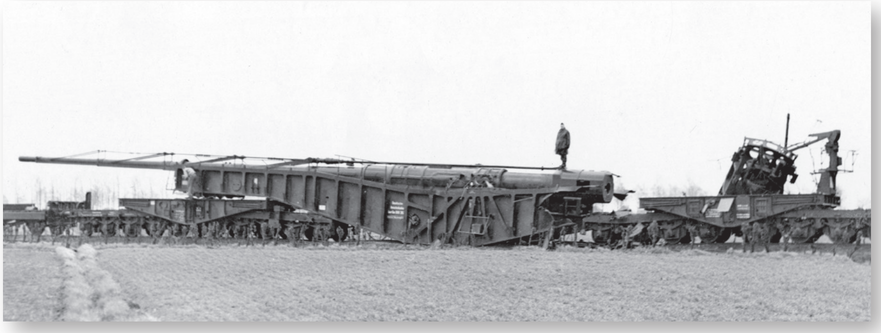
operated from sections of curved track. The Allies responded to the long-range bombardment by sending reconnaissance aircraft to locate the guns. Although the "phantom guns" were spotted more than once, they had moved from their firing positions once the Allied fighter-bombers arrived. In addition, the Germans built dummy guns on flat-cars that were moved about to distract Allied aircraft from the real guns. The railway guns continued to fire on the Anzio beach-head through the end of April 1944, with Robert firing 278 rounds, and Leopold 251 rounds, for a total of 529. Batterie Erhardt ran out of ammunition in mid-April 1944; its total contribution to the bombardment is uncertain. Small-scale barrages by the two K5(E) guns in May brought the final total to about 700–800 rounds.

German Railway Artillery on the Western Front

Following Operation *Barbarossa*, many of the German railway guns that had

Most of the railway artillery batteries stationed in Normandy were lost in the summer retreat. This is one of the 24cm K(E) Theodor Bruno of E.722 that was captured by the US Army in the railyard at Torigni-sur-Vire in early August 1944.



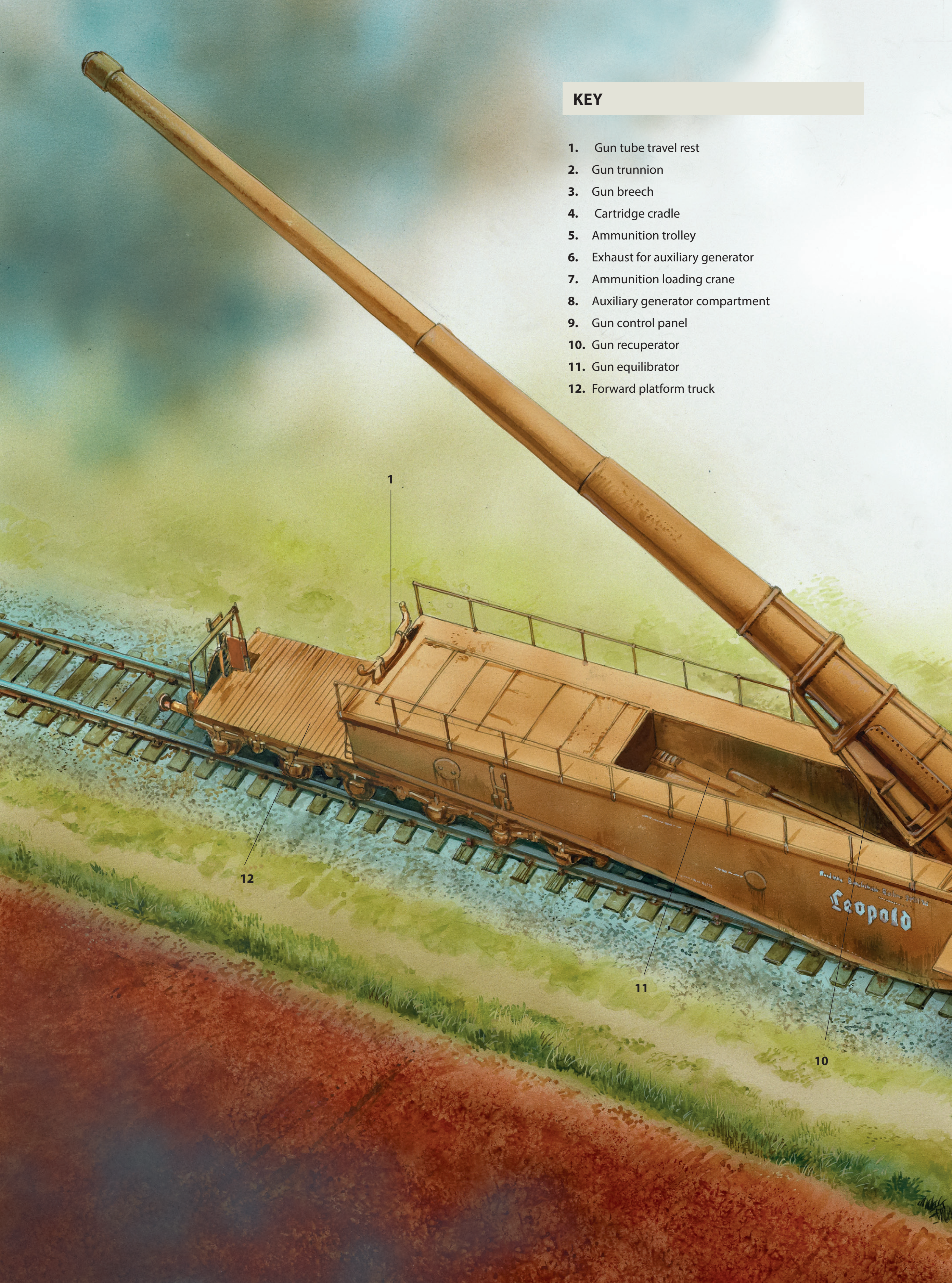


This 21cm K12 of E.701 was abandoned near Sluiskil in the Netherlands in September 1944 after it had been rendered inoperable by demolishing the rear carriage. It is seen here in its travel mode with the gun carriage in the lowered position.

been deployed in the initial assault returned to Western Europe for incorporation into the expanding Atlantic Wall program. The heaviest concentration of German railway artillery in the West was in the 15.Armee section that included the Pas-de-Calais and Belgian coast. In 1941, there were three regiments in this area controlling 11 railway artillery batteries. Nearly all of these batteries were deployed in the coastal defense role. As mentioned earlier, the guns in the Pas-de-Calais area were occasionally used in the gun duels on the English Channel, but in reality, these guns did not have the range to bombard England except for a very narrow swath of the coast, nor did they have the accuracy or fire controls to engage in long-distance duels against maritime targets. There were a total of 864 rounds fired by the railway artillery against British targets around the English Channel in 1940–44; most of these, 362 rounds, in 1940 in preparation for Operation *Sealion*, the planned invasion of England.

There was a plan drawn up in 1943 to move the long-range railway guns including Dora and Gustav to the Pas-de-Calais for strikes against southern England as part of a broader plan to bombard England in retaliation for Allied bombing raids on Germany. The core of this program was the new generation of missile weapons, the V-1 and V-2 missiles, but railway artillery played a secondary role in the plan. Besides the 80cm guns, there were also plans to use the K5(E) and K12(E) guns with the new long-range arrow projectiles. In the event, the artillery aspects of this effort were largely abandoned since their firepower was inconsequential. The arrow rounds, although very long ranged, offered very modest high-explosive payload. For example, the 31cm Spreng-granate 4861 PPG (Peenemünder Pfeilgeschoss: Peenemunde Arrow Projectile) for the smoothbore K5(E) Glatt had a range of 150km, but it weighed only 136kg with a 25kg high-explosive fill. This might be a worthwhile projectile when dealing with specific military targets, but not especially valuable for city bombardment compared to the 1-metric ton warheads of the V-1 and V-2 missiles.

The 7.Armee, which covered lower Normandy and Brittany in the summer of 1944, had eight railway gun batteries at the time of the D-Day invasion, none of them in the immediate *Overlord* landing area. A few of these batteries were in range of the Normandy battlefields and fired at targets during the summer campaign, and others were moved into the area. E.688, located in Quetteville with the 28cm K5(E), fired towards Gold and Juno beaches starting in late July, and at targets around Caen in August 1944. Another K5(E) battery, E.765, deployed near Malaunay in August 1944 and fired at advancing Allied forces west of Rouen in late August 1944. Two batteries on the Cotentin peninsula near Cherbourg took part in the fighting with the



KEY

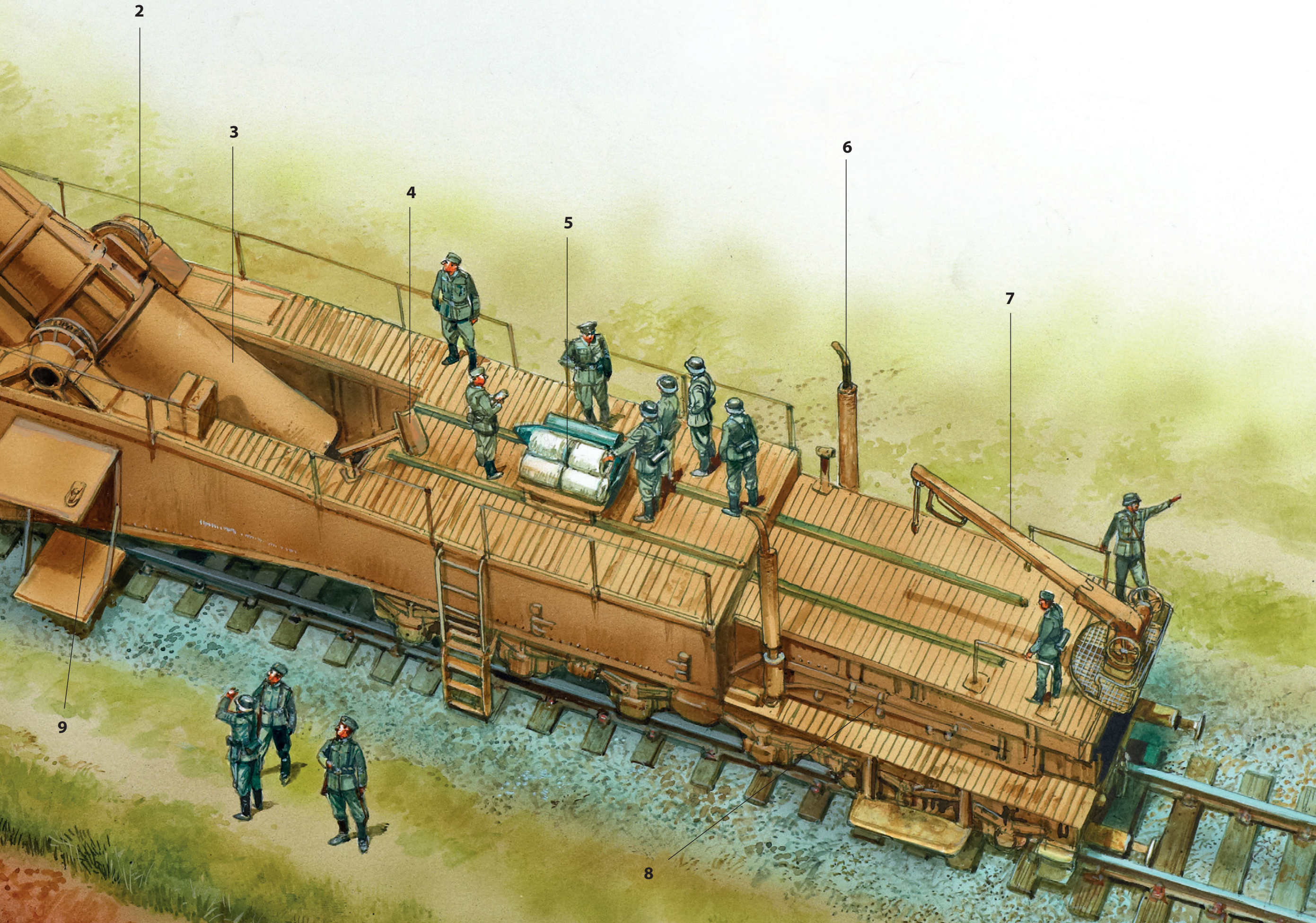
1. Gun tube travel rest
2. Gun trunnion
3. Gun breech
4. Cartridge cradle
5. Ammunition trolley
6. Exhaust for auxiliary generator
7. Ammunition loading crane
8. Auxiliary generator compartment
9. Gun control panel
10. Gun recuperator
11. Gun equilibrator
12. Forward platform truck

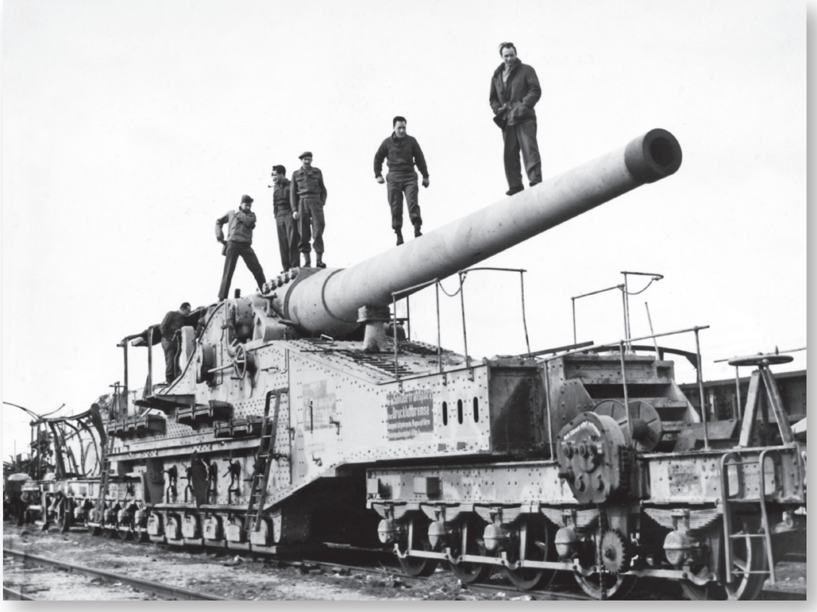
E

28CM K5(E), 2./E.725, FRASCATI, ITALY, FEBRUARY 1944

Allied intelligence was never entirely clear about the number of railway guns being used and so the "phantom guns" were generically called "Anzio Annie" or the "Anzio Express." During the German retreat from south of Rome at the end of May 1944, the two K5(E) guns were trapped in the railyard at Civitavecchia on June 2, the barrels were spiked, and the guns abandoned. Although the guns were captured, the German railway gun crews escaped and the batteries were reconstituted later with new guns. By the end of June 1944, German forces in Italy included two 28cm K5(E), six ex-Italian 19.4cm K(E) 486(f), and nine 32cm K(E) 651(f) railway guns. These guns saw limited combat use in the subsequent months of fighting in this theater.

Technical Data	
Designation	28cm K5(E)
Manufacturer	Krupp and Hanomag
Gun tube length (calibers)	L/76
Weight	218 metric tons, 85-metric ton gun tube
Elevation	0–50 degrees
Azimuth	1.0 degrees
HE projectile weight	255kg (28cm gr.35); 247kg (R.gr.4331)
HE fill	25kg (28cm gr.35 and R.gr.4331)
HE projectile velocity	1,120m/s (28cm gr.35); 1,130m/s (R.gr.4331)
HE projectile range	62km (28cm gr.35); 86.5km (R.gr.4331)



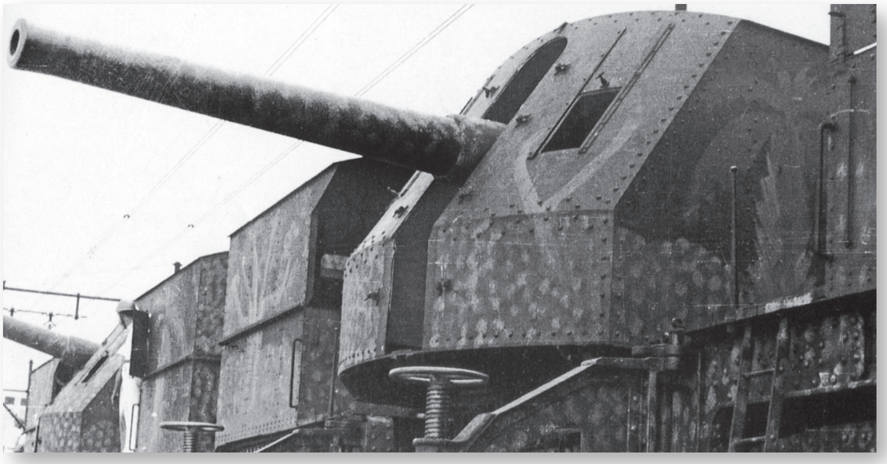


Allied journalists clamber over a 27.4cm K(E) 592(f) that had been captured by the 3rd Armored Division near Cologne in late March 1945. Of the six of these French guns in German service, three were lost in the Montélimar pocket in August 1944, and the other three in Germany in March–April 1945 during the encirclement of the Ruhr.

First US Army in June 1944. Four other army batteries in Brittany played a small role in the August–September fighting, mainly the battery at Brest.

The 1.Armee on the Bay of Biscay had four railway artillery batteries in 1944, concentrated on the Biarritz coast and near the Gironde estuary. This area saw no fighting in 1944 and the batteries retreated back towards Germany after the Operation *Dragoon* landings on the Riviera coast on August 15, 1944. The 19.Armee on the French Mediterranean coast had three railway artillery batteries at the time of the Operation *Dragoon* landings, concentrated near the mouth of the Rhône river near Marseille. There was also one of the rare Kriegsmarine naval railway batteries, the Gneisenau, armed with 15cm guns, but it withdrew before the landings. The army railway batteries were caught up in the retreat up along the Rhône valley later in the month and fired on advancing Seventh US Army troops. All were lost when trapped in the Montélimar pocket. By the end of the summer 1944 fighting, the Wehrmacht had lost the 21 Heer and Kriegsmarine railway artillery batteries that had been deployed in France and the Low Countries, along with their 58 railway guns. This was by far the heaviest loss of German railway guns during the war, and crippled the force.

A handful of railway gun batteries remained operational in western Germany in the final months of 1944. During the fighting near Aachen in September 1944, E.674 equipped with the 24cm K(E) Theodor-Bruno fired on the advancing First US Army. The 1.Armee in Lorraine was supported by



The Italian navy made extensive use of artillery trains along the Ligurian coast for the defense of major naval bases such as Genoa and La Spezia. This is Carro armato con cannone da 120/45 of TA 120/2/S on the Ligurian coast in 1940.

Eisenbahn-Artillerie-Abteilung.640 Stab that included two 28cm K5(E) batteries. These were deployed in areas with tunnels for protection due to the threat posed by Allied aircraft and counter-battery fire. After it had fired at the advancing US XX Corps, the US artillery crews in early October discovered its firing location and began counter-battery fire on Sunday October 8, 1944, using an 8in gun and a 240mm "Black Dragon" howitzer. The K5(E) operating from the Ébersviller railway tunnel was severely damaged during this exchange and pulled back for repair. Another K5(E) gun, dubbed the "Nancy Gun" by US troops, was active in the XII Corps sector. The gun was subsequently put out of action by air attacks.

A concentration of railway guns was built up in preparation for the Ardennes offensive in December 1944, including eight batteries under Eis. Art.Abt.725 and Eis.Art.Abt.780. Three of the batteries had recently been re-equipped at Rügenwalde with some of the new sub-caliber arrow projectiles, and their targets included cities quite far from the front including Maastricht in the Netherlands and Verviers in Belgium. A total of 2,492 rounds of all types were fired by the railway guns during the Ardennes campaign.

Railway Gun Bombardment during Ardennes Offensive December 1944

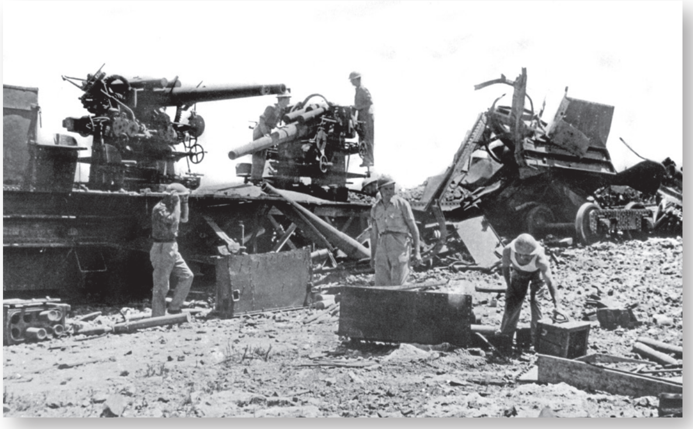
Gun	Rounds
24cm Theodor, Theodor Bruno	1,290
28cm Bruno Neue	327
28cm K5	388
30/12cm K5 Glatt	90
34cm 673(f)	164

The Ardennes offensive was the last concentrated use of German railway artillery in the West during the war. There were other smaller operations, notably attempts to down the Ludendorff bridge at Remagen after its capture by the US Army in early March 1945.

ITALIAN RAILWAY GUNS

The Italian army acquired four Armstrong-Vickers-Schneider 381/40 railway guns from Ansaldo in 1917. They proved complex to operate and were put into storage after the war at the arsenal in La Spezia. There was some consideration to reactivate them in 1943 for the defense of the naval base. Ansaldo also experimented with a long-range 200mm gun with an L/100 barrel length.

Although the army showed little interest in railway guns, the Italian navy (Regia Marina) adopted armed trains for the coastal defense role shortly before the Great War. The navy was especially concerned about the



The Italian navy stronghold at Syracuse on Sicily used artillery trains for mobile coastal defense, and this is the TA 102/1/T that was stationed on the rail line north of Syracuse between Cape Santo Panagia and the Magnisi peninsula. It was armed with four 102/35mm pedestal-mounted dual-purpose guns and is seen here being inspected by British troops after its capture in July 1943.

The 28cm K5(E) Ausf. C named Leopold was sent back to the United States and displayed for a half-century at the Ordnance Museum at Aberdeen Proving Ground, Maryland.

threat posed by Austro-Hungarian warships raiding along the Adriatic coast and small numbers of mobile gun batteries seemed more economical than large numbers of fixed coastal defense batteries. The navy's artillery and armaments directorate in La Spezia developed three types of armed trains in 1915 by mounting naval guns on standard flat-cars at the Arsenale Militare. The "I Tipo" was intended for engagements with enemy ships and each was armed with four 152/40 guns with one gun per flat-car. The "II Tipo" was armed with two 120/40 per car, with two such gun cars per train. The "III Tipo" was intended as a dual-purpose train, but primarily oriented to antiaircraft defense, and each train had eight 76/40 guns with two per car. A total of 12 trains were assembled, numbered TA I through TA XII (TA: Treno armato). The concept was validated on February 3, 1916, when one of the trains repulsed an Austro-Hungarian naval raid by a cruiser and three destroyers along the coast near Ortona-San Vito Lanciano-Chiete. The naval armed trains saw combat on several later occasions during the war in both the antiship and antiaircraft defense roles.

Another example of a preserved 28cm K5(E) Ausf. D can be found on the Pas-de-Calais at the museum of the Batterie Todt. This is the survivor of the Eisenbahn-Batterie.749 captured in the Montélimar pocket in southern France.

F

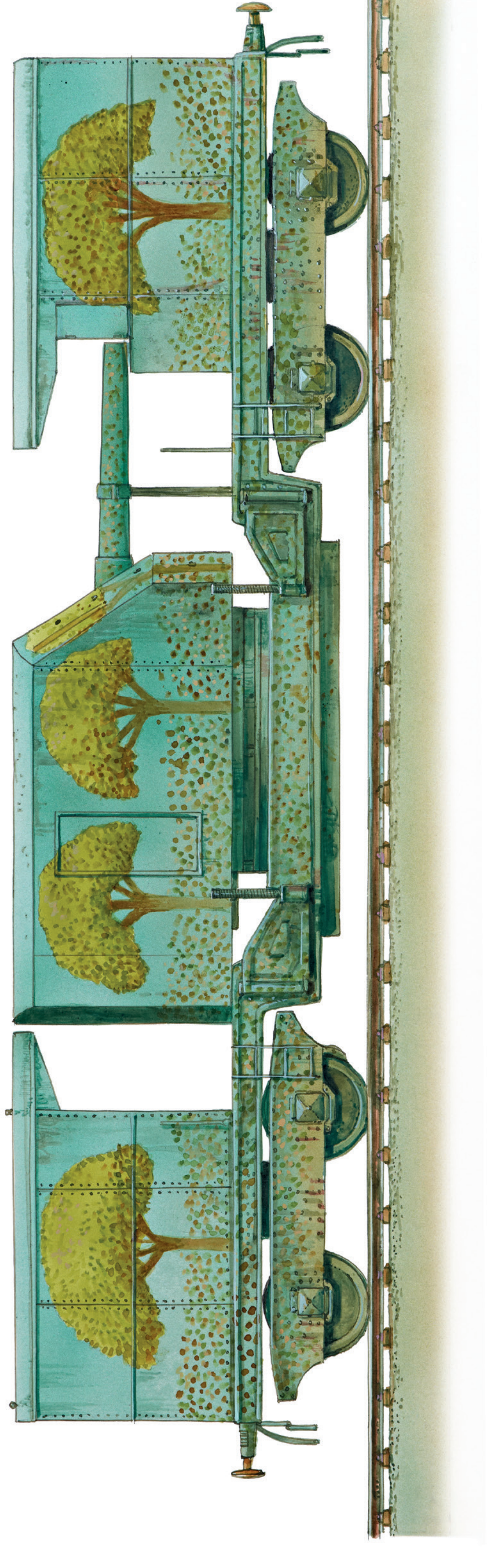
ITALIAN TRENI ARMATI DELLA MARINA

1: TA 120/4/S-4-120/45, Comando operativo a Genova, June 1940

The Italian navy operational command headquartered at Genoa in 1940 had five TA 120 armed trains, three at Savona (numbered TA 120/1/S to /3/S) and the other two at Genoa (/4/S, /5/S). These trains were painted overall in dark gray-green (grigio-verde) and many had an elaborate trompe d'oeil camouflage added on top of this showing trees and foliage.

2: TA 152/1T-4-152/40, Marimobil di Messina, Sicily, 1943

At the time of the Operation *Husky* landings in July 1943, the Marimobil armed train command on Sicily had ten armed trains including three 76mm trains, one 102mm train, three 120mm trains and three 152mm trains. This particular train was stationed at the Termini Imerese in Palermo where it fought against the US Seventh Army. It was finished in overall dark gray-green (grigio-verde) and had an assortment of small railway stencils as well as the battery number (P1) in white.



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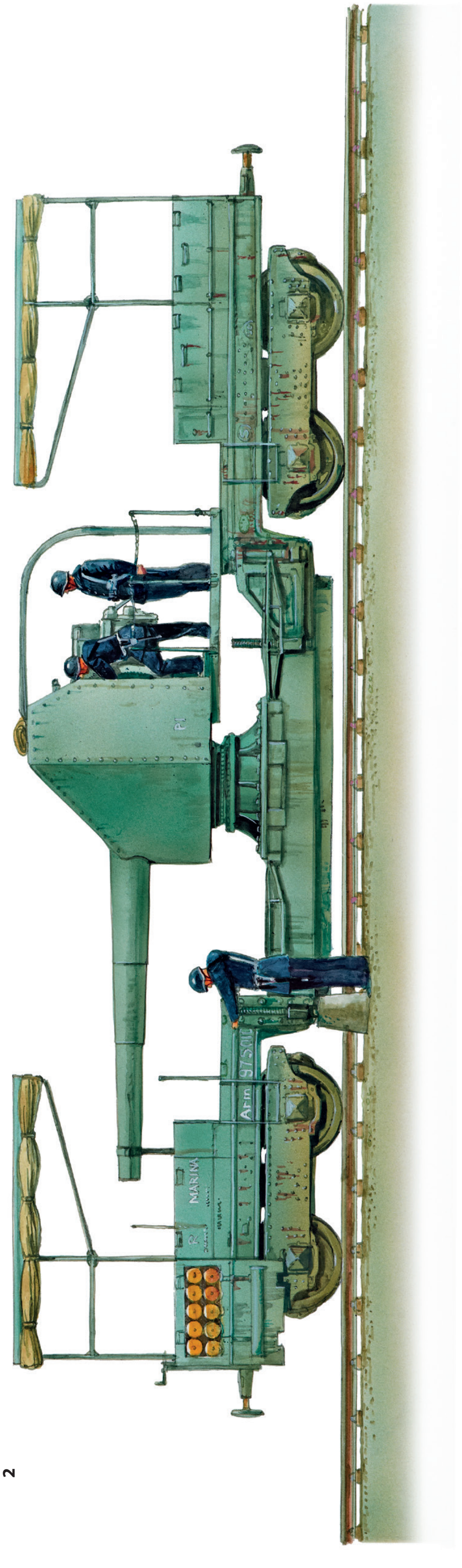
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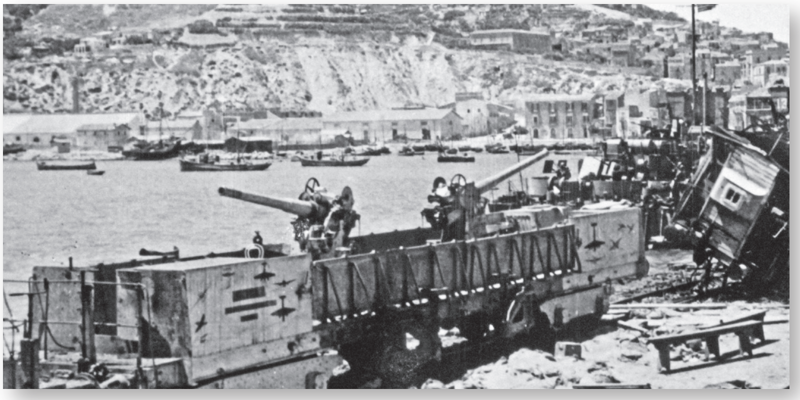


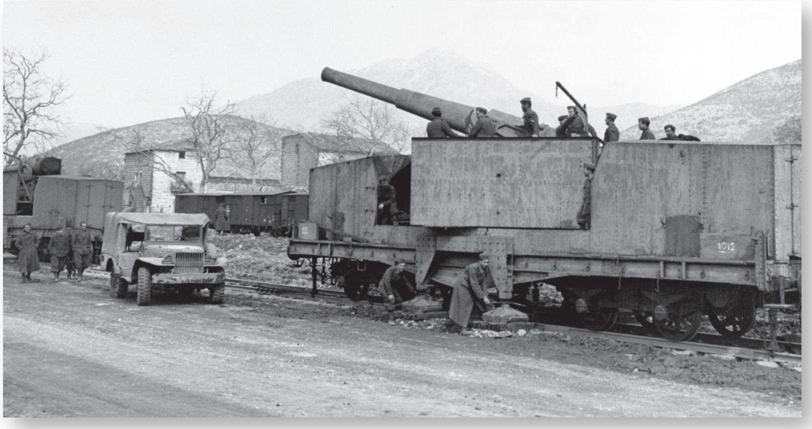
This is a portion of the armed train 76/2/T based at Agrigento near Licato that was knocked out during the Operation *Husky* landings on Sicily in July 1943. This car has two dual-purpose 76mm guns with armored ammunition boxes on either end.

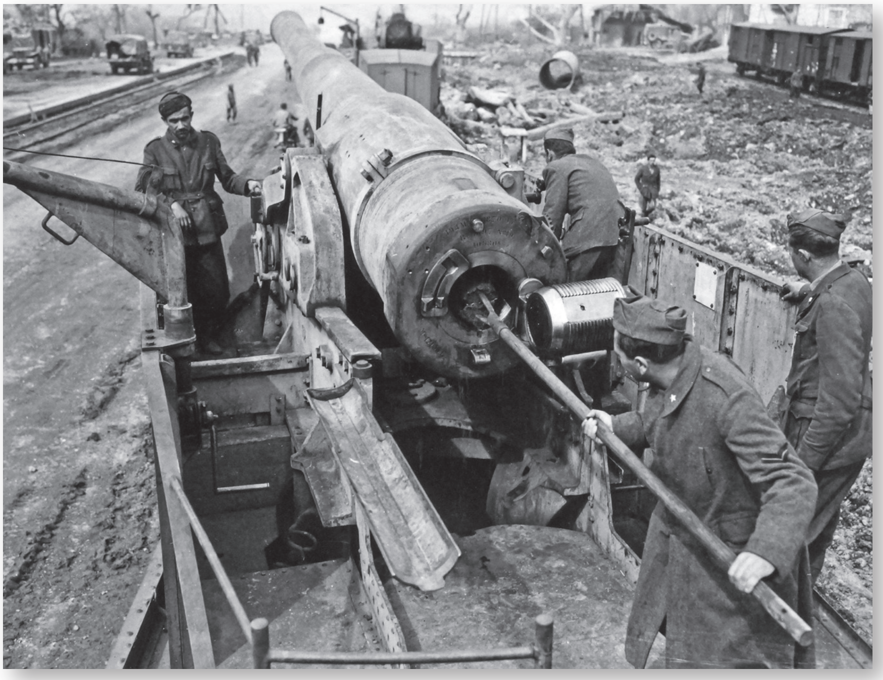
The wartime success of the trains in the coastal defense role led to their modernization in the mid-1930s with the construction of a new generation of railway guns with 120mm and 152mm guns in turreted mounts. With the disappearance of the Austro-Hungarian threat, the trains were shifted to the west to deal with potential threats from the French navy along the Ligurian coast and the Royal Navy around Sicily. At the time of the French campaign in June 1940, there were two naval railway gun commands, one based in Genoa with five 120mm trains and the other based in Palermo on Sicily with one 76mm train, a 102mm train, a 120mm train and four 152mm trains.

On June 14, 1940, a French naval task force from Toulon staged Operation *Vado*, a naval raid against the Italian naval base at Genoa. The armed train TA 120.3/S was one of the few Italian coastal defenses that responded. The Genoa group also provided artillery support for Italian army actions along the French frontier in June 1940. The next large-scale combat took place on Sicily in July 1943 following the Allied Operation *Husky* landings. The Marimobil trains played a limited role in the fighting, and three were knocked out in clashes with American forces near Licata and Porto Empedocle, and against British forces near Catania; the remaining trains were lost with the surrender of the island since they could not be evacuated. This left four trains in the Genoa area. When Italy withdrew from the conflict in September 1943, the German army took over the Genoa train groups. At least one train remained in German service, but most of them were dismantled and their armament used in the construction of the Gothic Line defenses.

Following the 1940 campaign with France, Italy received an allotment of French railway guns as part of the armistice. This included 12 194mm TAZ modèle 1870/93, four 240mm TAZ modèle 1884/17 Batignolles, and three 340mm guns including the 340mm modèle 1912 à berceau and 340mm modèle 1912 à glissement. The 194mm guns were modified by removing the overhead roof armor. They were locally called the Cannone da 194/29. In January 1942, four 194mm gun batteries were organized, numbered 254–257, with three guns each. Subsequently, two additional railway gun batteries were organized, 259 and 260, with the 240mm guns. These batteries were assigned for coastal defense, but there are few details of their actual

This is a war-booty French 194mm TAZ modèle 1970/93 in service with the Corpo Italiano di Liberazione on the Monte Cassino Front on March 8, 1944. A second gun can be seen to the left.





The Italian army modified their war-booty 194mm railway guns by removing the armored roof to make them easier to service in a warmer climate.

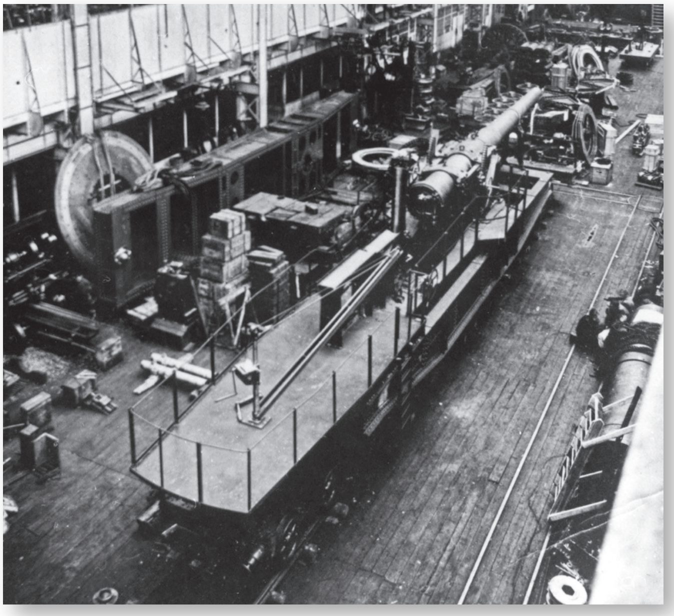
deployment. The 340mm guns were retained for technical evaluation. Some consideration was given to deploying them in the defense of the naval base at Taranto, but this did not take place, in no small measure due to a shortage of ammunition. An Italian project for a 305/46 railway gun was begun at the Arsenale di Taranto in January–February 1943, but this proved stillborn due to Italy's wavering commitment to the war. At least six of the 194mm and both 240mm guns were taken over by the Germans in September 1943 when Italy defected from the Axis.

After Italy's defection, the Allies helped to establish a new Italian army and its new Corpo Italiano di Liberazione took part in the fighting on the Monte Cassino front in March 1944. This corps had at least two of the French 194mm TAZ modèle 1987/93 railway guns.

SOVIET RAILWAY GUNS

Imperial Russia had longstanding ties with Schneider-Canet and obtained its first railway guns from France before the Great War. The main artillery directorate sponsored the first local designs of a ZhDAU (Zheleznodorozhnaya artilleryiskaya ustanovka: Railway artillery mount) from the naval gun design bureau under Aleksandr G. Dukelskiy at the Metallurgical Factory (MZ: Metallicheskiy zavod) in St Petersburg. Production contracts were awarded for two 10in (254mm) guns using gun tubes left over from the Rostislav class of warship, and the first was completed in July 1917. There were plans to establish a Separate Naval Heavy Train Battery (Otdelnaya morskaya bateriya-poezd). This project never materialized due to the Russian Civil War. After the war, the two railway mounts were used to create two 203mm railway guns called the TM-8 (Transporter morskoy 8-dyuimovogo: 8in naval transporter).

During the Russian Civil War of 1917–21, a significant number of improvised railway guns were assembled. In most cases, these consisted of pedestal-mounted warship guns mounted on heavy flat-cars. Following the civil war, about 20 heavy railway guns were retained in navy service, primarily for coastal defense. These were gradually retired but the two TM-8 remained in service in the Far East into 1941.


This is the Transporter Battery No. 1 armed with a 10in gun at the Petrograd Metallurgical Plant in 1917. The two of these that were manufactured were reconfigured in 1920 as the TM-8, armed with an 8in (203mm) gun.

In the 1920s, railway gun development was assigned to the Soviet navy for coastal defense. Work on a new generation of railway guns centered around the Dukelskiy naval gun design bureau at the Leningrad Metallurgical Plant (LMZ). Work started in January 1927 on a railway mounting for the British-designed 14in (356mm) L/52 naval gun from the Izmail-class cruiser. This was designated as TM-1-14, the "1" indicating the project sequence and the "14" indicating the gun caliber in inches. A second project began in 1932 at the Marti plant in Nikolayev under the direction of the TsKB-3 naval shipbuilding design bureau. The TM-2-12 was based around the British-designed 12in (305mm) L/40 naval gun from the Andre Pervozvaniy-class warship. A third project, the TM-3-12, was also undertaken at Nikolayev using the longer 305mm L/52 from the sunken *Imperatritsa Mariya* battleship in Sevastopol harbor. All three railway guns used similar carriages. The use of the different guns was forced on the designers by the cessation of the production of large-caliber guns in Russia in 1917 that did not resume until the 1930s. The power of the guns led to the use of "moustaches," the Russian nicknames for recoil outriggers. These were not entirely satisfactory, and the more common method for firing was the use of a massive concrete anchor pad measuring 16x16x3m. This was not viewed as a drawback since the guns were intended for naval coastal defense and

G

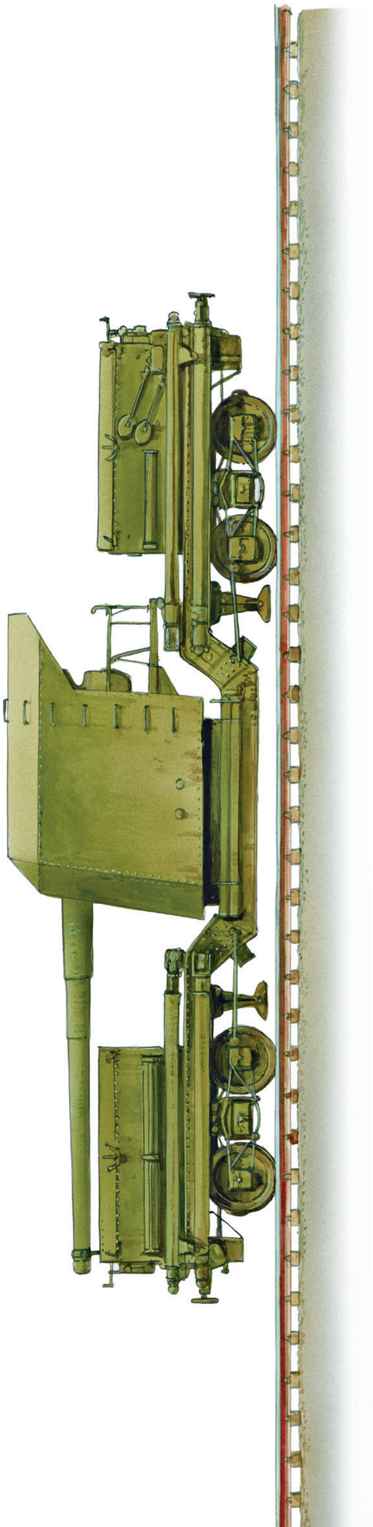
RAILWAY GUNS OF THE SOVIET BALTIC FLEET

1: TM-1-152 (B-64), 407th Railway Artillery Battalion, 101st Naval Railway Artillery Brigade, Leningrad Front, 1942

This expedient railway gun stemmed from a prewar requirement for a coastal defense gun based on the 152mm L/57 B-38 naval gun using the new MU-2 pedestal mount with armored shield. Twenty of these were ordered in March 1940. In September 1941, the NIMAP (Research Institute for Naval Artillery) was instructed to adapt this weapon to a heavy 60-ton railway car as an expedient railway gun. This project was known internally as YuB-63 and the modified railcar transporter as the B-64. TM-1-152 was the semi-official name for the four railway guns built in haste at the Bolshevik plant in Leningrad in the autumn of 1941. They were deployed with the 1121st and 1122nd batteries of the 407th Railway Artillery Battalion. They were finished in the usual Red Army 4BO camouflage green, and the guns were often camouflage painted with whitewash during the winter months.

2: TM-1-180, 401st Railway Artillery Battalion, 101st Naval Railway Artillery Brigade, Leningrad Front, 1942

The TM-1-180 was the most numerous of the prewar naval railway guns, with 16 attached to the Baltic Sea Fleet in 1941 at the start of the war. Due to the loss of the battery in Finland, there were only three batteries left in 1941, numbered 12, 18, and 19. They formed the 401st Railway Artillery Battalion and they served on the Leningrad Front in 1941–44. They were finished in the usual Red Army 4BO camouflage green.



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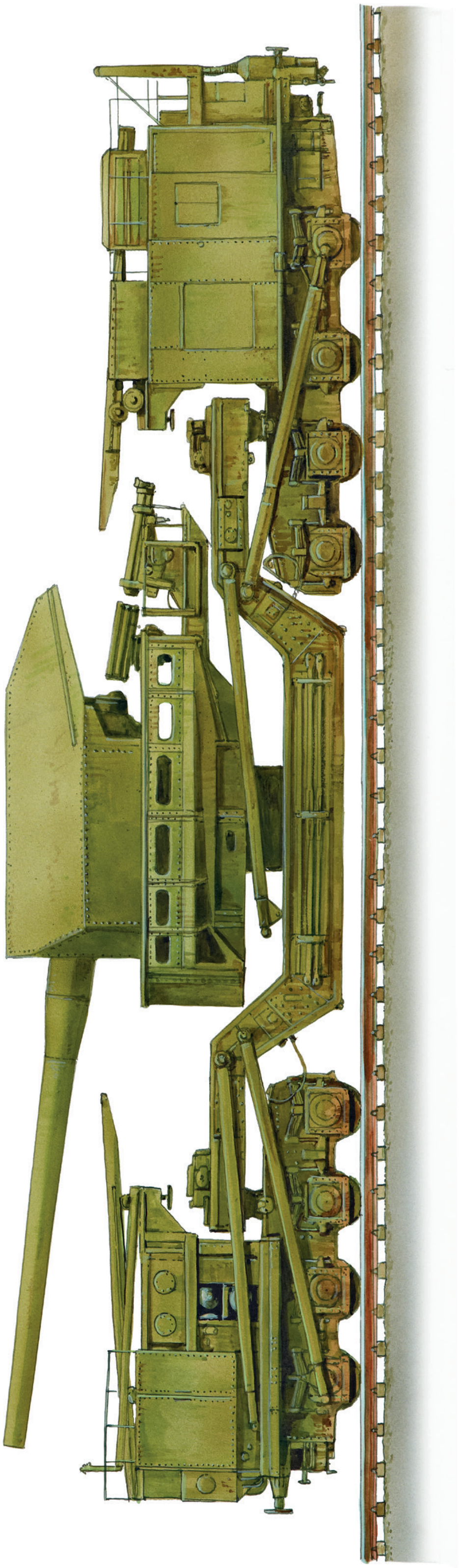

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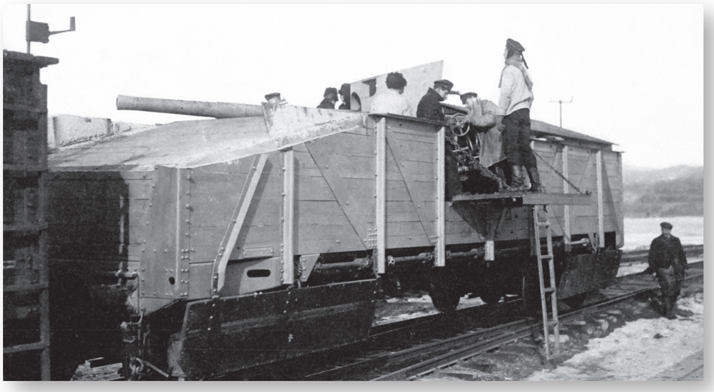
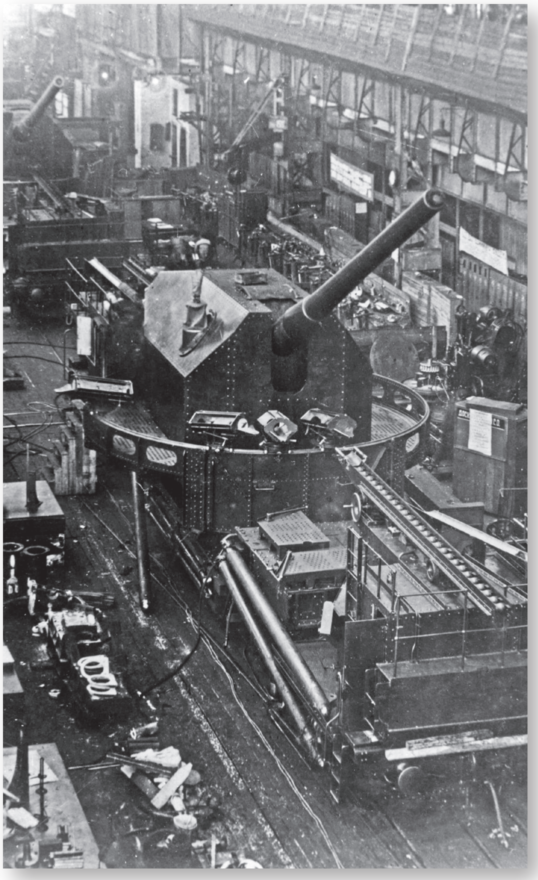


Several dozen railway guns were constructed by both Red and White forces during the Russian Civil War. These typically consisted of naval coastal defense or guns on pedestal mounts bolted to heavy-duty flat-cars such as this example of a 6in Canet mount on a White Russian naval railway battery in Vladivostok in January 1920.

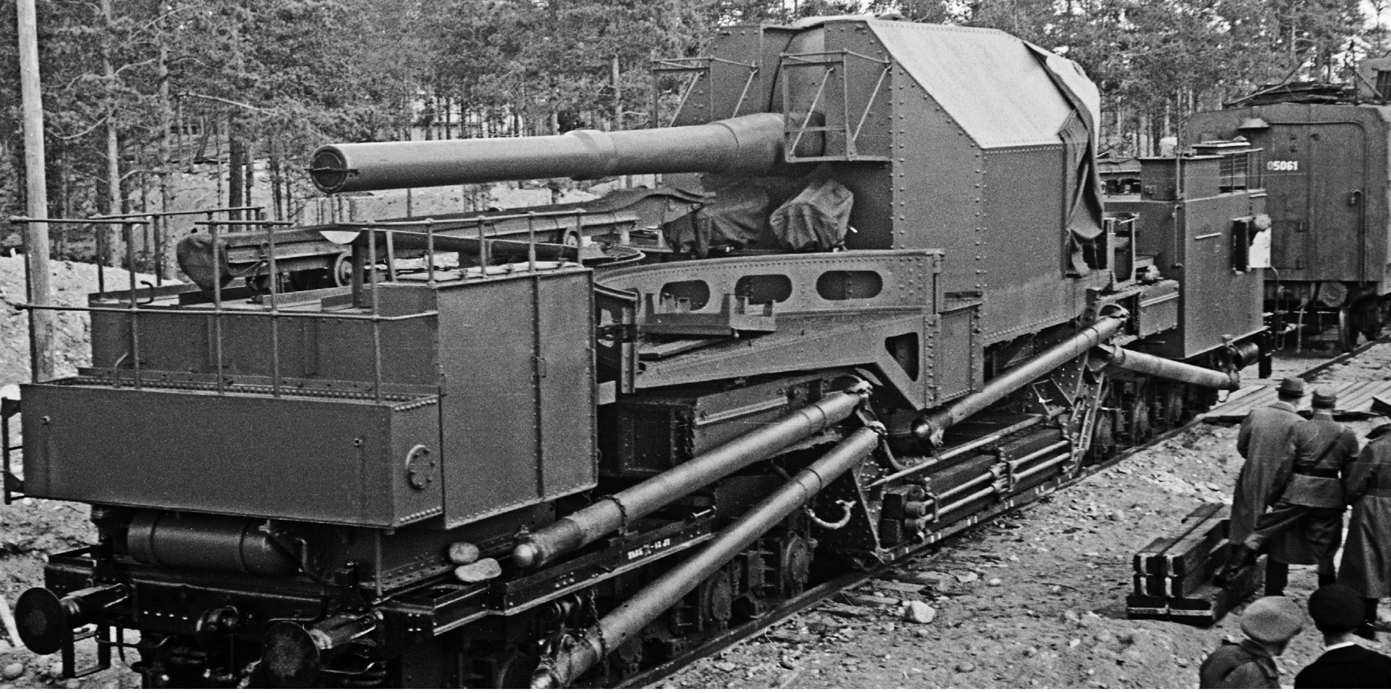
therefore a series of anchor pads could be constructed and the small numbers of guns moved from site to site. These guns were built in very small numbers, two batteries each of the TM-1-14 and TM-2-12, and one battery of the TM-3-12. Each battery had three guns plus supporting cars.

Development of a medium railway gun began in 1931 at LMZ. This weapon was designated as the TM-1-180, a switch in designation practices to metric for the gun caliber. This weapon was based on the MO-1-180 coastal gun in an all-azimuth, armored turret. The gun tubes were the 180mm B-1-K type from the Bolshevik plant intended for the Krasniy Kavkaz-class cruiser. For anchorage, it used a set of eight “moustache” outriggers. The initial version of the guns had shallow rifling of 1.35mm depth; the later production batches used deeper grooves of 3.6mm. Initial testing began in 1934. One of the novelties of the gun was its use of a special armor-piercing discarding-sabot (APDS) projectile for extra range in addition to a conventional armor-piercing round. The TM-1-180 was by far the most widely manufactured Soviet type before the war, equipping five coastal defense batteries, each with four guns.



A pair of TM-1-180 during their assembly in the 1930s at the Leningrad Metallurgical Plant.

The army wanted to obtain its own railway guns, and a program for a new generation of railway guns began in 1938 for both army and navy use at a prison design bureau of the NKVD secret police in Leningrad. The intention was to manufacture two different weapons using a common carriage, the TP-1 356mm gun and the TG-1 500mm howitzer. The TP-1 was intended for army or navy use while the TG-1 howitzer was intended primarily for army use against land targets, especially fortifications. The production program anticipated the manufacture of 14 TP-1 railway guns and 16 TG-1 railway howitzers by 1942. The initial example of the 356mm TP-1 had been assembled at



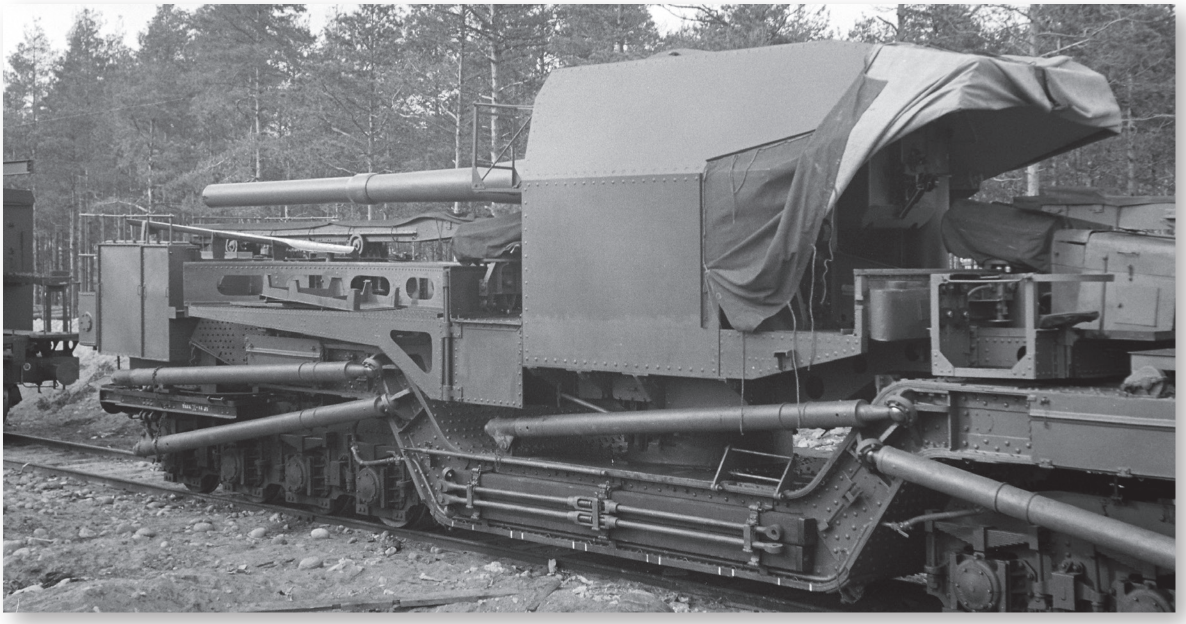
A TM-1-180 in travel mode with its outriggers folded against the lower carriage. This is one of the examples captured by the Finnish army at the Hanko naval base in December 1941. (SA-Kuva)

Novokramatorsk by the time of the outbreak of the war with Germany on June 22, 1941, but the program went into limbo due to the chaotic conditions in 1941.

Soviet World War II Railway Guns Technical Characteristics

Designation	TM-1-180	TM-2-12	TM-3-12	TM-1-14
Caliber (mm)	180	305	305	356
Gun tube length (calibers)	57	40	52	52
Weight (metric tons)	160	280	340	412
Elevation (degrees)	50	50	50	50
Azimuth (degrees)	200	2.5	2.5	2.5
HE projectile weight (kg)	98	332	471	748
HE projectile fill (kg)	38	100	132	203
HE projectile velocity (m/s)	920	793	762	731
HE projectile range (km)	38	24	29	31

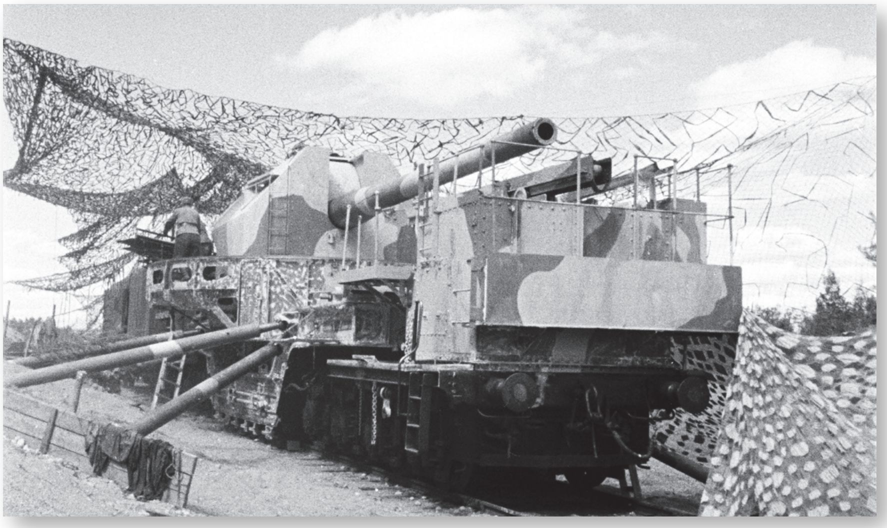
Besides the formal design programs in Leningrad, the navy in the Far East began a local program in 1931 due to the panic that followed the Japanese occupation of Manchuria. At the time, there was only a single railway gun battery in the Far East, equipped with the 203mm TM-8. As in the civil war, expedient railway guns were hastily created by mounting medium-caliber naval guns on flat-cars. The 5th Naval Railway Artillery Battalion (MZhDAD: Morskaya Zhelezno-dorozhnaya artilleryiskaya divizion) was formed in January 1932 with three batteries of these new guns: 1st Battery with two 203mm guns, 2nd Battery with three 152mm guns on Canet mounts, and 3rd Battery with three 130mm guns. These operated along the coast of the Amur Bay on the Shkot peninsula. As the new railway guns were completed in Russia, they were dispatched to the Vladivostok area. The 6th Naval Railway Artillery Battery (6 MZhDAB) with the new 356mm TM-1-14 arrived in late 1933 and was stationed at the Egersheld position near the Vladivostok



An excellent technical study of the TM-1-180 from the rear of the gun turret showing the canvas travel curtain partly removed from the rear of the turret. The recoil outriggers can be seen in the folded travel mode. (SA-Kuva)

fortress. A special 1.4km-long railway tunnel was dug in 1933–35 to provide secure basing for the expanding railway gun force. Two more batteries, 7 and 8 MZhDAB, arrived in the mid-1930s. The expedient railway guns were gradually retired as the new and more powerful guns arrived.

The Soviet occupation of the Baltic states in 1939–40 led to the appropriation of several railway guns. Estonia's armored train regiment included a long-range heavy gun battery. This had at least three old Russian flat-cars armed with a variety of guns including two 6in Canet guns and the others with Russian 130mm Model 1913 L/55 naval guns and 4in guns. The Estonian railway guns were taken over by the Soviet navy and became the new 1 MZhDAB. The Latvian coast artillery had five 6in guns on Canet mounts and in 1937–38 mounted these on old Russian flat-cars. These constituted two batteries of Latvia's armored train regiment. After the Soviet occupation, these were used to form the 2 MZhDAB. At the time of Operation



A TM-1-180 in firing position with its recoil-absorbing outriggers locked into firing position. This is one of the guns of the 17 MZhDAB recovered at Hanko in December 1941 and put back into use by the Finnish army. (SA-kuva)

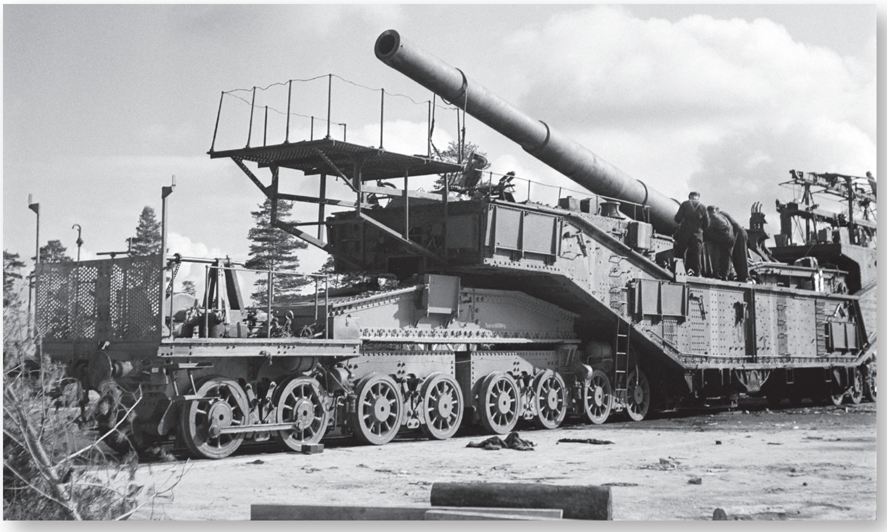
Barbarossa in 1941, the Soviet navy had 14 naval railway artillery batteries in service with 45 railway guns as detailed in the chart below. As can be seen, the main concentrations were in the Far East around Vladivostok, and in the Baltic on the approaches to Leningrad.

Soviet Navy Coastal Defense Railway Batteries in 1941

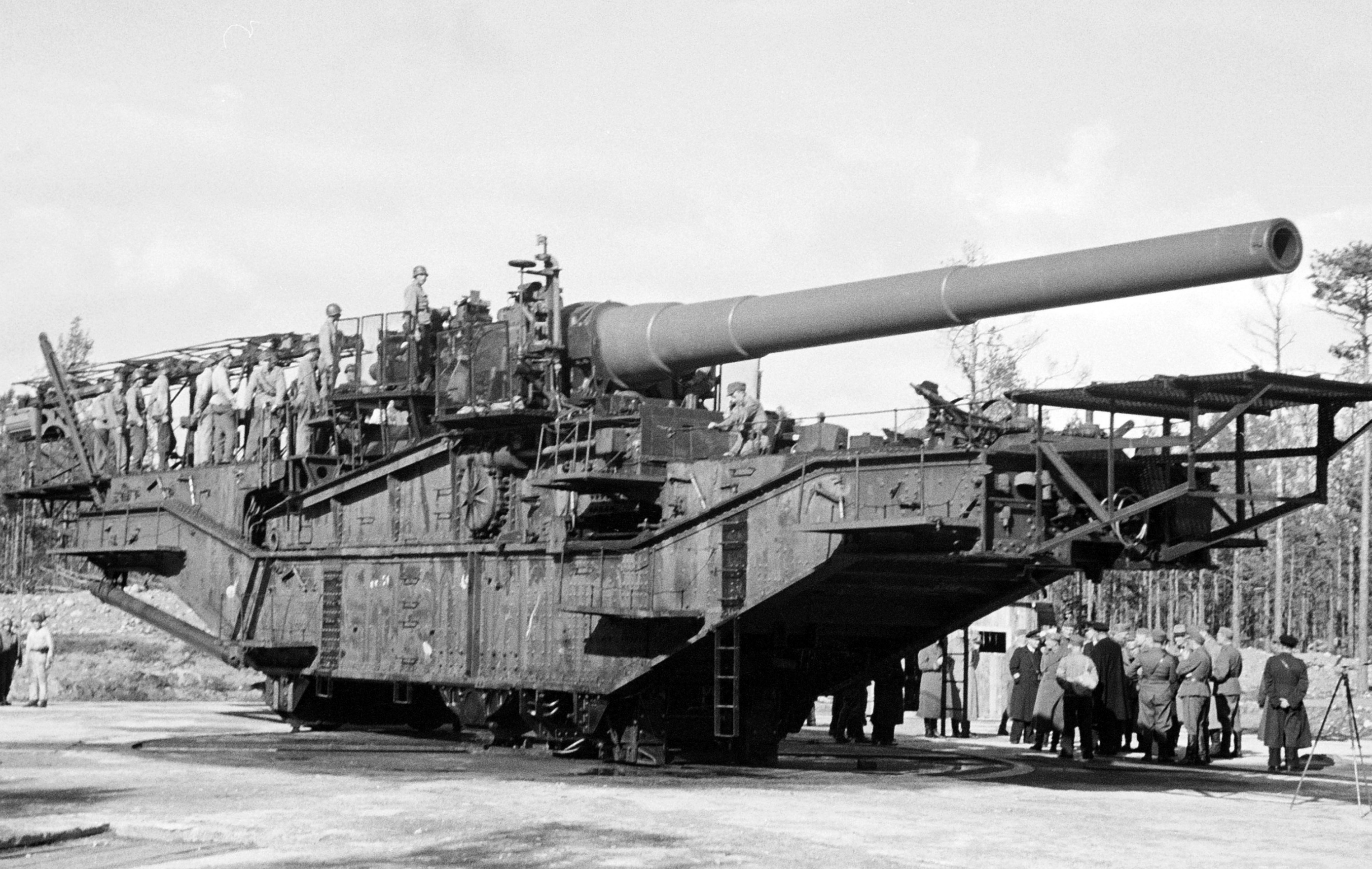
MZhDAB number	Gun type	Caliber (mm)	Quantity	Fleet	Location
6	TM-1-14	356	3	Pacific	Far East
7	TM-2-12	305	3	Pacific	Far East
8	TM-2-12	305	3	Pacific	Far East
10	TM-8	203	2	Pacific	Far East
1	Estonian	various	3	Baltic	Estonia
2	Latvian	152	5	Baltic	Latvia
9	TM-3-12	305	3	Baltic	Hanko (Finland)
17	TM-1-180	180	4	Baltic	Hanko (Finland)
11	TM-1-14	356	3	Baltic	Paldiski Bay (Estonia)
12	TM-1-180	180	4	Baltic	Paldiski Bay (Estonia)
18	TM-1-180	180	4	Baltic	Liepāja, Latvia
19	TM-1-180	180	4	Baltic	Leningrad
16	TM-1-180	180	4	Black Sea	Novorossiysk

The German invasion of the Soviet Union in June 1941 led to the loss of some of the Baltic Sea Fleet railway guns, including the appropriated Latvian and Estonian guns, but most of the four regular naval railway batteries gradually withdrew towards Leningrad in good order. So, for example, the 11 MZhDAB in the first half of September 1941 fired some 568 rounds and was credited with the destruction of 35 German tanks.

The Baltic Fleet lost its forward bases in the Baltic states and became bottled up in Leningrad. As a result, there were a large number of trained warship gun crews as well as idled warships. The navy decided to use these resources to create improvised naval railway gun batteries. In addition, local factories had been the primary manufacturers of the naval guns, and several types were still in production. The warship guns were on all-azimuth pedestal mounts, and so it was relatively straightforward to attach them to standard



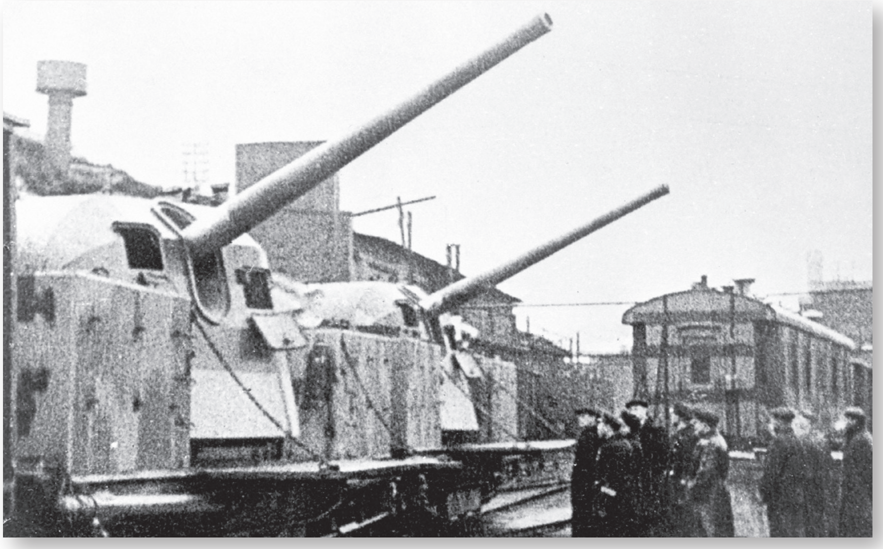
The 9 MZhDAB on the Hanko peninsula off Finland was armed with three TM-3-12 305mm railway guns in 1941. The guns were spiked by the Soviet crews before withdrawing, and the Finns repaired them by substituting barrels from the dreadnought *General Alekseyev* left in Bizerte, Tunisia in 1920. (SA-kuva)



Although the TM-3-12 could be fired from its railway mounting, the more common practice was to move the gun to prepared concrete anchorages, emplace it on its traversable base, and remove the railway trucks. This gun was returned to the Soviet navy in January 1945 under the terms of the Soviet–Finnish armistice and remained in service until 1991. (SA-kuva)

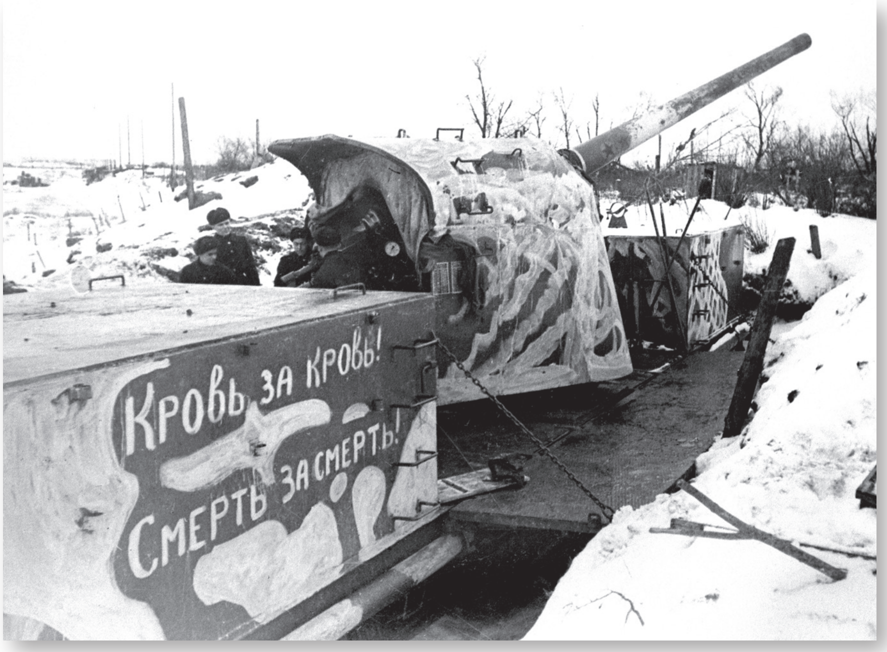
60-ton heavy-duty flat-cars. The usual practice was to mount the gun in the center of the flat-car, add ammunition containers on either end, and attach recoil outriggers if necessary. This process was undertaken at the Bolshevik and Red October plants and the first new railway guns arrived on the front in August 1941. Through the end of 1941, the Leningrad plants created about 70 railway guns, including four 152mm L/57 B-38 guns, 36 130mm L/50 B-13 guns, four 120mm L/50 guns, and two 100mm B-24 guns. A total of 29 separate railway gun batteries were organized, later grouped into seven battalions. Four of these were allotted to the Red Army, while the other three remained under Baltic Fleet command. The army use of the railway guns proved troublesome due to the lack of suitable naval ammunition in the army supply chain. In February 1942, all seven battalions reverted to naval command and were subordinated to the new 101st Naval Railway Artillery Brigade (101-ya Morskaya Zhelezno-dorozhnaya artilleryiskaya brigada). At the time, it had a strength of 28 batteries with 63 guns and it was manned primarily by naval personnel. The brigade was extensively used in the defense of besieged Leningrad, with the mobile batteries moved from sector to sector to provide artillery support for army units. Due to its excellent combat record, on January 22, 1944, it was renamed as the 1st Guards Krasnoselskaya Naval Railway Artillery Brigade (1-ya.Gv.MZhDAB).

When the siege of Leningrad was lifted in January 1944, the separate batteries of the 1-ya.Gv.MZhDAB were deployed as part of the Leningrad Front during the advance into Finland and down the Baltic coast. During the attack on Finland in June 1944, 15 batteries of the brigade were used to provide artillery support. These units had proven extremely valuable in both offensive and defensive combat, but were no longer needed in such a

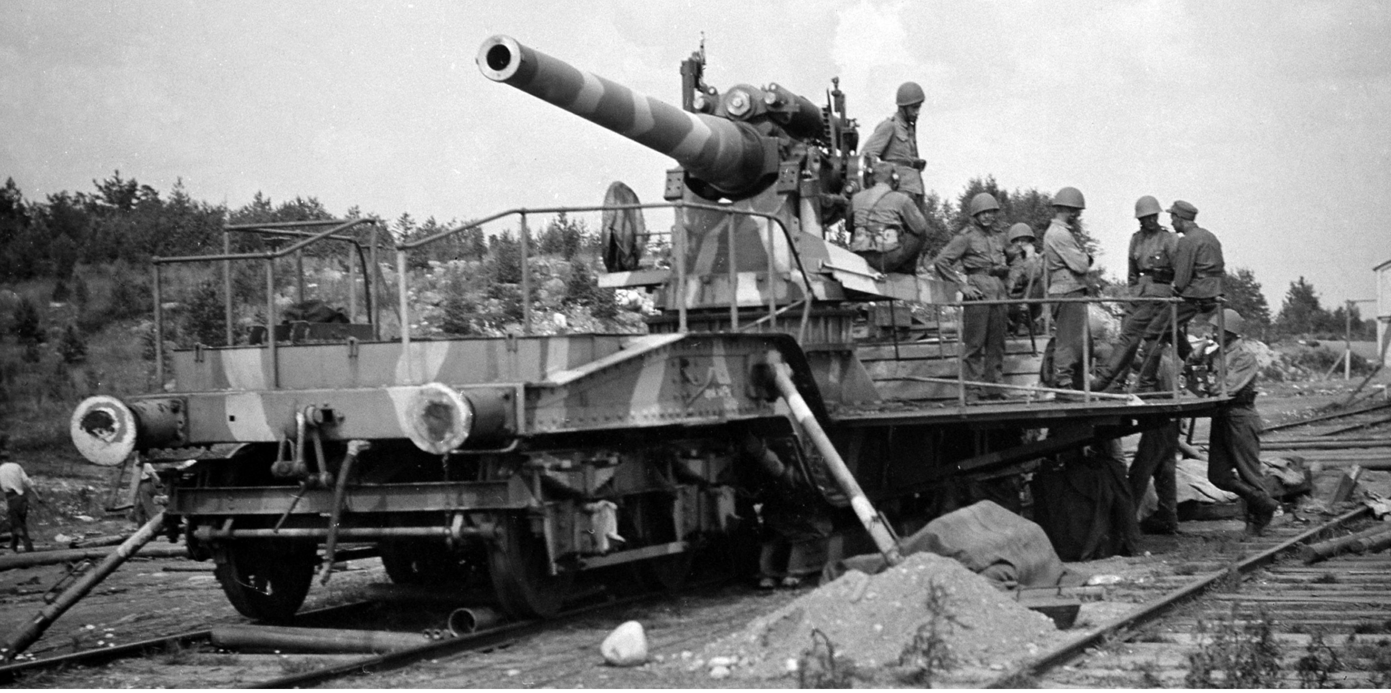


Soviet naval officers inspect a pair of the new improvised railway guns assembled in local Leningrad plants in the autumn of 1941 using available naval guns. The 130mm B-13 turreted naval gun was manufactured in the local Bolshevik plant, with 155 produced in 1941.

concentrated form. As a result, the batteries and battalions were broken off into smaller formations. So during the Kurland campaign along the Baltic coast in January–February 1945, the Libava Operational Group was formed to support the 51st Army with ten 180mm, 12 152mm, and nine 130mm railway guns while the Tukumskaya Operational Group was assigned to the 22nd Army with 17 130mm railway guns. The naval railway artillery battalions were also involved in the battles for Memel (January 1945, seven batteries) and Königsberg (April 1945, eight batteries). Some of the railway guns stationed with the Pacific Fleet were sent back to European Russia to reinforce the brigade in 1945. At the end of the war, the brigade had about 85 large-caliber railway guns including three 356mm, three 305mm, 20 180mm, 20 152mm, and 39 130mm guns.



The most common of the improvised Soviet navy railway guns used the common 130mm L/50 B-13 naval mount, in serial production since May 1935. This example is in action on the Leningrad Front and carries the slogan "Krov za krov, Smert za smert!" – "Blood for blood, death for death!"



The Finns mounted the Tsarist 152mm L/45 coastal defense gun on railway flat-cars and four of these were in service by 1940. One is seen here near Uuksu on Lake Ladoga northeast of Leningrad on July 20, 1943. (SA-kuva)

Soviet railway gun batteries in the Far East were cut off from any new weapons during the war, so the Dalzavod plant in Vladivostok used the same expedient as in Leningrad and mounted a number of 130mm B-13-2 naval gun turrets on 60-ton flat-cars. These were deployed with the new 222nd Naval Railway Artillery Battalion. This new unit was consolidated with the prewar units under the command of the 12th Naval Railway Artillery Brigade. The 222 MZhDAD took part in the bombardment of Japanese forces from the area of the Grodekovo railway station during the August 1945 assault on occupied Manchuria.

Work on a new generation of Soviet railway guns was started in October 1943 by TsKB-19 (Central design Bureau 19). The TM-1-16 406mm railway gun used the B-37 naval gun intended for the cancelled Sovetskiy Soyuz battleship program. The program resumed in 1951 at the navy's central artillery design bureau, TsKB-34, under the designation SM-36 using a new double recoil system. A parallel program was also initiated as the 305mm SM-41 using the SM-33 gun from the Stalingrad-class cruiser. The SM-36 and SM-41 had effective ranges of over 100km. Besides the heavy gun projects, two new 180mm railway guns were developed, the TM-2-180 and the SM-41. These four programs were brought to a screeching halt in February 1956 by a Council of Ministers decree initiated by the new party boss, Nikita Khrushchev, who felt that such weapons were useless compared to missiles.

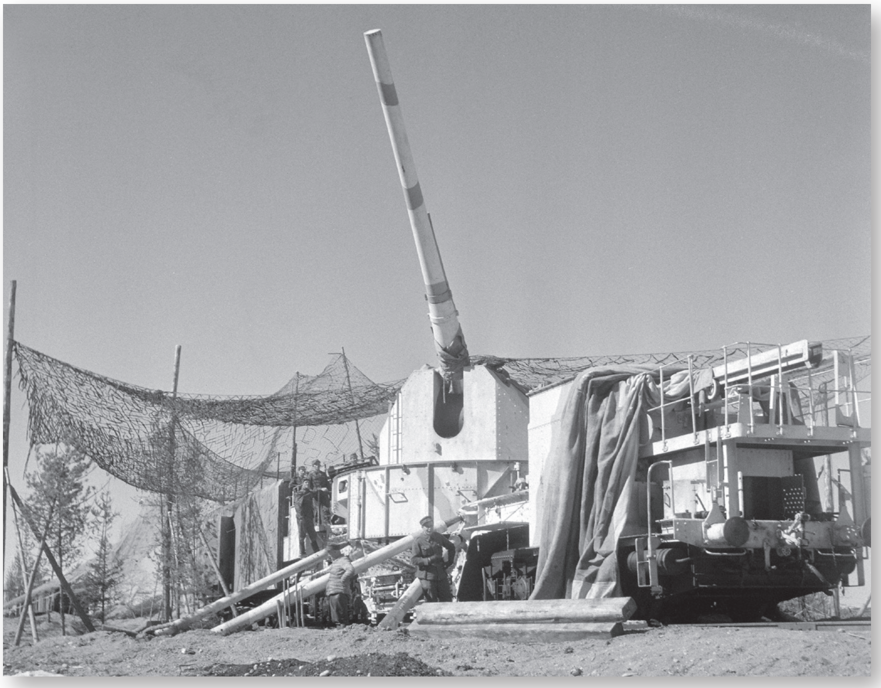
One of the more unusual programs pursued in the Soviet Union after the war was the 56cm RAK(E) railway gun. The Germanic designation was entirely appropriate as the designers were a group of imprisoned German engineers from Krupp and other firms. The gun used the RS-142 rocket-assisted projectile that weighed 1,160kg on launch. It had an effective range of 70 to 95km, with a high-explosive payload of 220kg. The program petered out with a decision to merge the rocket-assisted projectile project into the SM-54 406mm gun program.

Soviet specialists collected many components of the German 80cm Dora railway gun and shipped them back to the Soviet Union for exploitation. They eventually ended up at the proving grounds of the Barrikady artillery plant in Volgograd to aid in the development of the BR-105 605mm smoothbore gun in the early 1950s. As in the case of other super-heavy gun programs, this one ended in the late 1950s due to Khrushchev's disfavor.

FINLAND

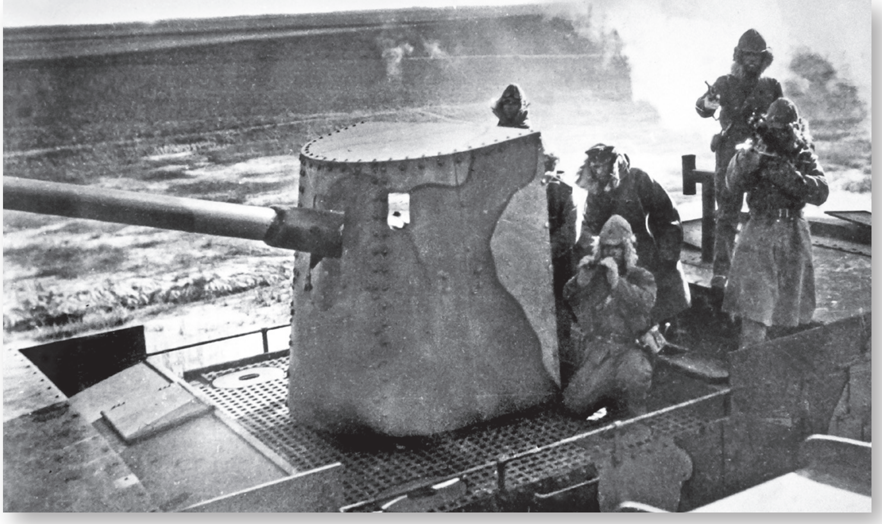
Finland inherited a variety of Russian coastal defense artillery in 1918, including about 100 of the 152mm L/45 guns that were deployed in the coastal fortresses of the Peter the Great Maritime Fortress System that had been constructed around 1912–17 to protect St Petersburg. This gun was a French Canet design, license-produced at the Obukhov factory since 1892. The Finns modified the design by flipping the recuperator system above the gun to provide better elevation, and it was called 152/45-C in Finnish service. One of these guns was mounted on a railway flat-car in the 1920s on an experimental basis as the 152/45-C Raut (C = Canet; Raut = railway artillery). During the 1939–40 Winter War with the Soviet Union, three more of these railway guns were built. These were widely used in the Continuation War of 1941–44 against the Soviet Union.

Following the 1940 armistice, the Soviet Union took over the old Tsarist naval base on the Hanko peninsula from Finland. Two Soviet naval railway gun batteries were deployed there, the 9 and 17 MZhDAB. The 305mm TM-3-12 battery fired 591 rounds against the Finns before the base was evacuated in December 1941. When the Baltic Fleet abandoned the Hanko naval base in December 1941 they spiked the railway guns and demolished the support equipment. Finland decided to restore the guns. The three 305mm gun tubes of the TM-3-12 were too badly damaged to repair, but Finland had purchased 305mm gun tubes in 1940 from France that had been mounted on the Russian dreadnought *General Alekseyev* of the Black Sea Fleet, interned in



Four of the Soviet TM-1-180 railway guns were put back into service by the Finns under the local designation 180/57-NI Raut. This one is seen deployed near Seivästö, on Suursaari island off the coast of Leningrad on April 25, 1942. (SA-kuva)

A Japanese armed train of the Kwangtung Army in Manchuria in the early 1930s, armed with a 15cm Model 7 (1918) coastal gun. This style of armed train had been influenced by the Russian patterns from the 1919–20 Civil War battles in the Far East.

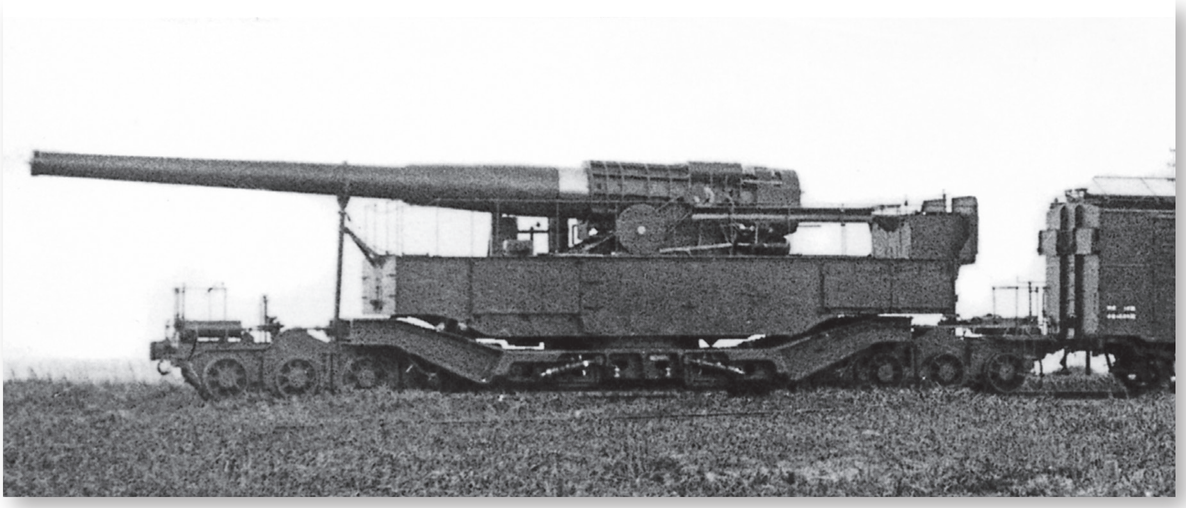


Bizerte harbor in 1920 in the wake of the Russian Civil War. These were used to reconstruct the TM-3-12 and they were ready for trials in October 1942; they were called 305/52-O Raut in Finnish service. The four TM-1-180 were also re-built and put back into service as the 180/57-NI Raut. Finnish accounts indicate that several Soviet navy 102mm guns mounted on flat-cars were found in the Hanko garrison. These were not standard Soviet navy designs, and were probably local improvisations by the Hanko garrison after the naval base became isolated in the 1941 campaign. The Finns put one or more of these back into service. Following the 1944 armistice, the former Baltic Fleet railway guns were returned to the Soviet navy and remained in service until 1991. Many are still preserved in the St Petersburg area.

JAPANESE RAILWAY GUNS

The Japanese Imperial Army took control of various White Russian artillery trains in the Vladivostok region in 1920 as part of the Allied intervention.

The Imperial Japanese Army began a program to develop a modern railway gun in 1925 using a barrel imported from Schneider. It was accepted for service in 1930 as the 24cm Type 90 but only a single example was acquired.



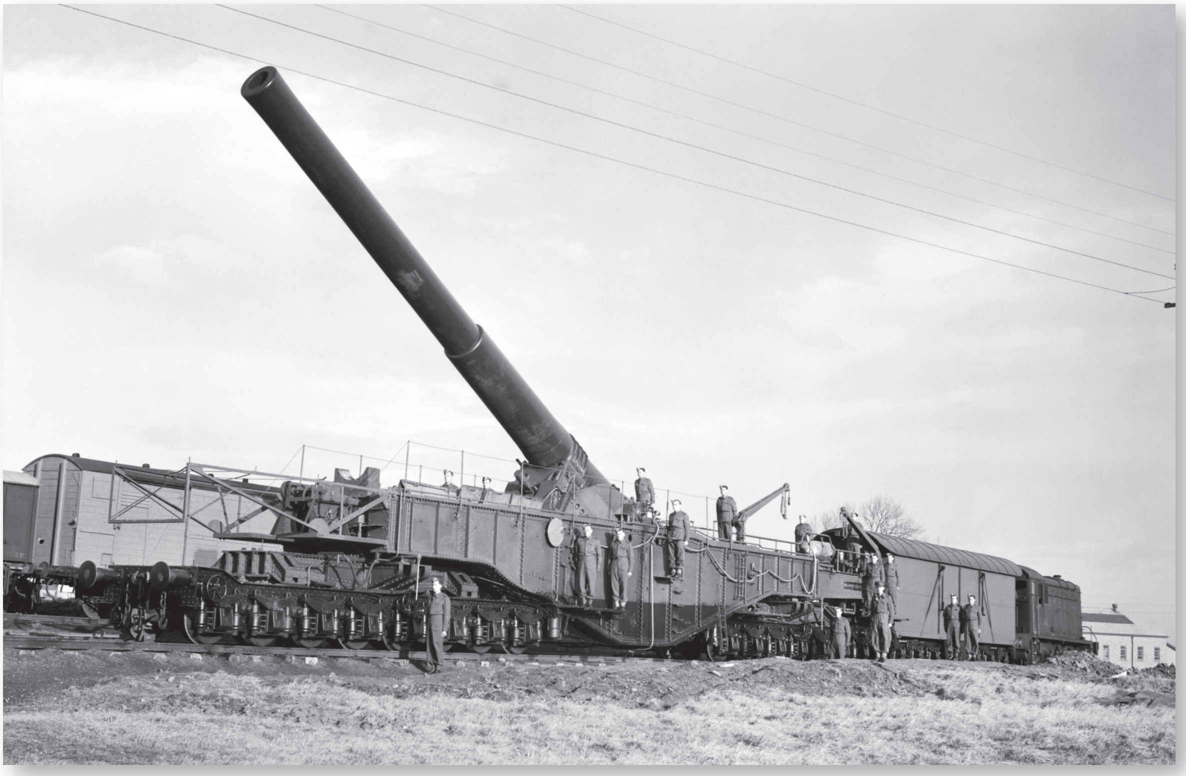
These were mostly dismantled or handed over to Allied forces such as warlords in China. The Japanese army in Manchuria and China in the 1920s and 1930s continued the practice of pedestal-mounted naval guns on flat-cars for fire support, but this was a local expedient. Japanese observers in Europe in the Great War had witnessed the use of heavy railway guns by France, and a program was started in Japan in 1925 to develop such a weapon. The Japanese government approached France for technical assistance, and Schneider offered to sell a 240mm L/51 gun that had been developed by the FAMH branch of St Chamond for a wartime French army requirement that had subsequently been abandoned. The gun had an effective range of 59km. The carriage and mounting for the gun were undertaken in Japan. The carriage had all-azimuth traverse and used folding outriggers for anchorage. Although the gun was officially accepted for service in 1930 as the 24cm Model 90, no further acquisition was undertaken. The gun was originally deployed for coastal defense at Futtsu, Chiba on Tokyo Bay. In 1941, it was deployed to the allied puppet state of Manchukuo in the Hulin area of Heilongjiang. Japanese troops spiked the gun and abandoned it following the August 1945 Soviet assault against the Japanese Kwantung army in Manchuria.

BRITISH RAILWAY GUNS

The British army made extensive use of railway guns in the Great War, but they largely fell out of favor after the war. Two old 9.2in Mk. XIII guns were sent to France with the British Expeditionary Force, but, lacking ammunition, they were not used and were abandoned near Dunkirk. Due to the threat of German invasion after the fall of France, the 2 and 3 Super Heavy Regiment RA were raised in September 1940 and equipped with several batteries of about 20 World War I vintage railway guns including the 9.2in railway gun, the 12in railway howitzer, and the 18in railway howitzer.

In August 1940, German heavy guns positioned on the Pas-de-Calais began shelling coastal transports near Dover. The German bombardments later extended to land targets and eventually involved both fixed-gun batteries and railway guns. The British response primarily involved coastal guns, but at least four World War I long-range railway guns were activated under the direction of Lt. Col. Montague Cleeve, who commanded a railway artillery battery in the Great War. Three railway mountings originally designed for the 14in gun and 18in howitzer were rebuilt to accommodate BL 13.5in Mk. V naval guns (BL = Breech Loading) from the old Iron Duke-class battleships. These were named HMG *Gladiator*, *Sceneshifter* and *Peacemaker* (aka *Piece Maker*), with the first completed in September 1940 and the last in May 1941. These were deployed with the Royal Marine Siege Regiment in Dover, and took part in the artillery exchanges across the Channel. The railway guns were not viewed as being as effective as the fixed coastal guns and in November 1943 the Royal Marines handed them back to the army for training use.

A fourth railway gun, the 18in howitzer HMG *Boche-Buster*, was taken out of mothballs, and after refurbishment was used to fire several test shots by the 11th Super Heavy Battery in February 1941 near Catterick Camp.



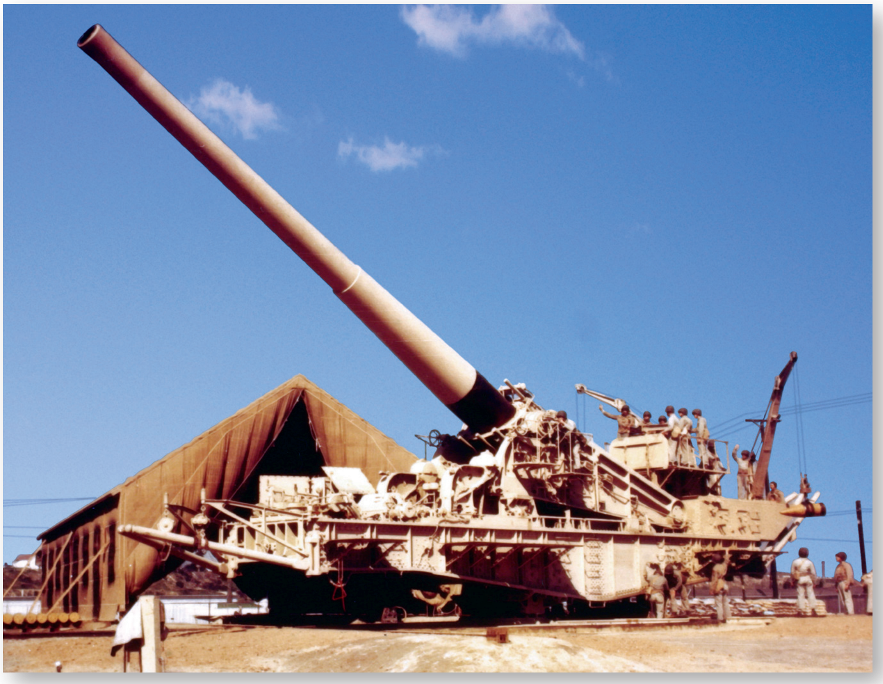
HMG *Boche-Buster*, an 18in railway howitzer, was the most powerful railway gun taken out of mothballs in 1940. It did not have the range to participate in the Channel gun duels, and so never fired a shot in anger during the war. It is seen here near Catterick, on December 12, 1940, before proceeding to Kent to take up position at Bishopsbourne on the Elham to Canterbury line. (IWM H 6089)

However, it was not used in the cross-Channel exchanges since it did not have sufficient range.

There was some thought of deploying railway guns to Europe in 1944 to deal with the Siegfried Line fortifications, but this never materialized due to the obsolescence of the guns and the difficulties moving them on the badly damaged French railway network. The batteries of the Super Heavy Regiment were re-equipped with US 240mm "Black Dragon" howitzers before being committed to combat in 1944.

US RAILWAY GUNS

The American Expeditionary Forces deployed the Coast Artillery Expeditionary Brigade with eight regiments to France in 1917–18. With US equipment still being manufactured, the units relied primarily on French railway guns. The first modern US Army railway guns, four 4.7in howitzers, were deployed to defend the Panama Canal in 1917. The US Navy also deployed five US-manufactured 14in railway guns to France in 1918. Of the 248 American railway guns and howitzers ordered during the war, 128 had been completed by 1919; the rest were cancelled. These weapons fell under the control of the Coast Artillery Corps after the war, which had very little interest in the guns on Schneider or Batignolles mounts because they were not especially useful in an antiship role. With the exception of a single experimental carriage with traverse, these were scrapped by the early 1930s. Three types of railway gun, a 7in gun, 8in gun, and 12in howitzer, had been built on traversable barbette mounts, and these remained in inventory.

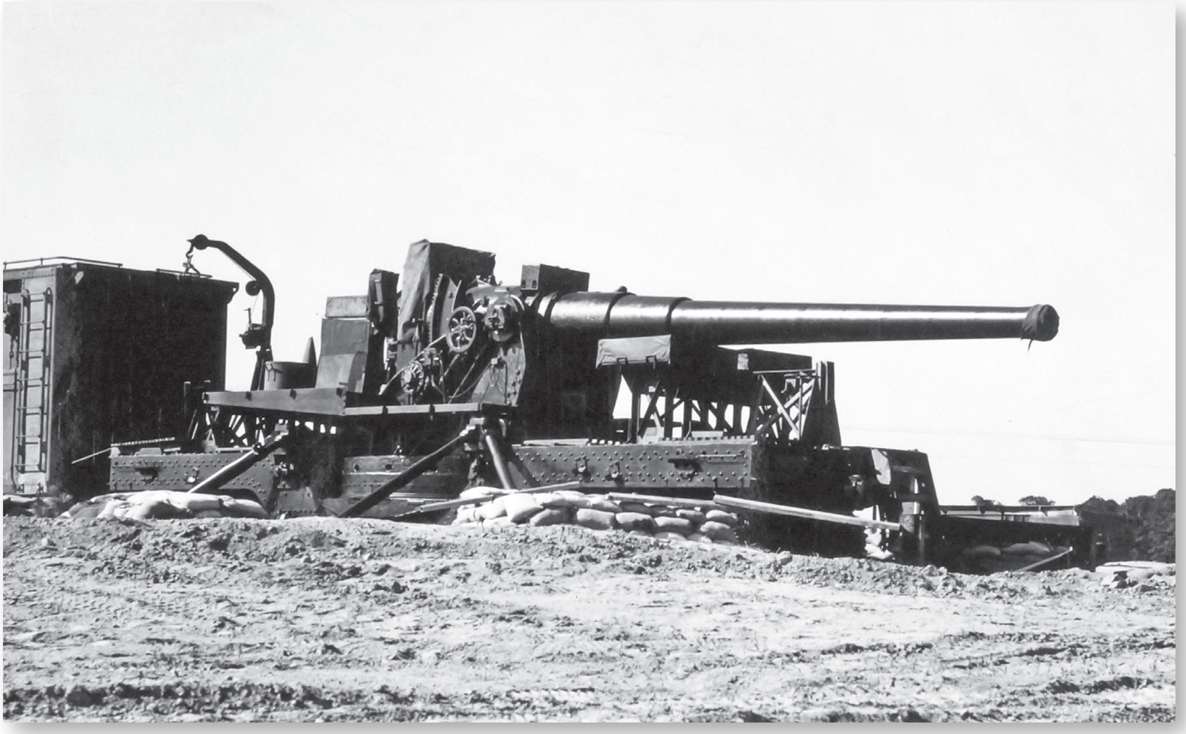


Four of the Model 1920 14in/50 railway guns were in service in World War II, divided between Fort MacArthur, California and Fort Grant on the Panama Canal. They were deployed in a fixed coastal defense configuration and a concrete anchorage, seldom using their railway mobility.

Due to a lack of funds, the railway units of the Coast Artillery Corps force was reduced to only the 52nd Artillery (Railway) by 1921, divided between Fort Monroe, Virginia on the Chesapeake Bay, and Fort Hancock, New Jersey on the Atlantic coast. In 1922, the 41st Artillery (Railway) was reconstituted as the core of a new railway coast defense force for Hawaii. These units relied on the existing 8in guns and 12in mortars on barbette mounts. At the start of America's involvement in the war in December 1941, a number of 8in guns remained in service. Some were earmarked for the Philippines; one arrived at Fort Mills on Corregidor but was not complete and did not see action in the 1942 fighting. A number were provided to Canada for defense of Vancouver, British Columbia.

Work on a new generation of railway guns begun in the early 1920s focused on the 14in L/50. Four of these were eventually built in 1924–30, with two being deployed at Fort MacArthur near San Pedro, California and two to Fort Grant on the Pacific side of the Panama Canal in 1925–29. These remained in service throughout World War II.

When the US Navy retired some of their 8in L/45 naval guns in the mid-1920s, the US Army adapted the surplus gun tubes to the existing 12in mortar railway mount. Due to a lack of funding, design was not completed until June 1941 when it was accepted for service as the 8in Mark VI Mod 3A2 on Railway Mount M1A1. A total of 29 of these were built in 1941–42. They were deployed with coastal artillery units on the Pacific, including Puget Sound, and near Santa Monica, California. Other were deployed to coastal artillery units on the Atlantic coast and on Chesapeake Bay. No US Army railway guns were fired in anger during the war.



A US Army 8in Mk VI Mod 3A2 railway gun of the 52nd Coastal Artillery emplaced at Fort John Curtis, Virginia on Chesapeake Bay in 1942.

RAILWAY GUNS IN RETROSPECT

World War II saw the last significant use of railway guns in combat. By 1945, less cumbersome methods had been developed for long-range heavy artillery. The US Army deployed the 8in gun and 240mm Black Dragon howitzer in combat in 1944–45, which were transported using tracked prime movers. After the war, this was followed by the M65 280mm heavy motorized gun, sometimes called the "Atomic Annie," since it could fire a small nuclear projectile. The Soviet army developed a number of tracked heavy weapons such as the 2A3 406mm gun and 2B2 420mm mortar, though none went into series production.

As foreseen by the German A-4, the real rival of the railway gun was the ballistic missile. These could be moved by road using specialized wheeled or tracked vehicles, and could fire either conventional warheads or tactical nuclear payloads. A good example of the Cold War types was the Soviet army's 9K72 Elbrus ballistic missile system, better known by its NATO codename, "Scud B." The missile was carried on an 8x8 heavy truck weighing 37 metric tons fully loaded. The missile weighed a bit less than 6 metric tons and could deliver a 1-ton payload to a range of 300km. Its accuracy was similar to that of the Dora 80cm gun, but with a thermonuclear warhead in the 500 kiloton range, its impact was immeasurably greater than that of any World War II railway gun.

FURTHER READING

There are a number of overviews of World War II railway artillery, with the heaviest focus on the German guns. There is good coverage of prewar Soviet naval railway guns, but the wartime expedient railway guns in the Leningrad area have not been as well documented.

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INDEX

Figures in **bold** refer to illustrations.

aircraft 4, 22, 27
  antiaircraft defense 4, 28
Allies, the 8, 10, 11, **B12**, 14, 20, 22, 23, **E25**, **26**, 27, 30, 31, 42, 43
ALVF (Artillerie lourde sur voie ferrée) 5, **6**, **7**, **A8**
  372ème Régiment 5, 7, **A8**
ammunition 11, **15**, 19, 22, **24**, **30**, 31, 38, 43
armed trains 27, **F28**, **30**, **42**
  TA 120 **26**, **F28**, 30
armistice **5**, 7, 8, 30, **38**, 41, 42
artillery 4, 6, 7, 8, 14, 15, 19, 23, **26**, **27**, 28, 30, 31, 38, 40, 41, 42, 43
  Coast Artillery Corps 44, 45; coastal 4, 8, 36, 41, 45; heavy 4, 46; railway 4, 8, 10, 11, **B12**, 15, 16, 18, 19, **22**, 23, 26, 27, 31, 37, 39, 41, 43, 47; Naval Railway Artillery Battalion (MZhDAB: Morskaya Zhelezno-dorozhnaya artilleryiskaya divizion): 1 MZhDAB 36, 37; 2 MZhDAB 36, 37; 5 MZhDAB 35; 6 MZhDAB 35, 37; 7 MZhDAB 36, 37; 8 MZhDAB 36, 37; 9 MZhDAB **37**, 41; 10 MZhDAB 37; 11 MZhDAB 37; 12 MZhDAB 37; 16 MZhDAB 37; 17 MZhDAB **36**, 37, 41; 18 MZhDAB 37; 19 MZhDAB 37; 101st Naval Railway Artillery Brigade **G32**, 38
Atlantic Wall, the 15, **C16**, 23
Axis, the 20, 31
azimuth 4, **5**, 7, 15, **25**, 34, 35, 37, 43

Baltic Fleet, the **G32**, 37, 38, 41, 42
Belgium 8, 27
berceau (affût à berceau) 6
  320mm berceau modèle 17 6; 340mm modèle 1912 à berceau 6, **7**, 30; 400mm berceau modèle 16 6, 7; *affûts à berceau* 5

Canet 4, 31, **34**, 35, 36, 41
carriages 5, **6**, **7**, **10**, 11, 14, **C16**, **23**, 32, 34, **35**, 43, 44
coastal defense/naval guns 4, **16**, 18, 28, 31, **G32**, 35, 37, **39**, 43
  B-13 **39**, 40; B-24 38; B-37 40; L/40 32; L/45 **40**, 45; L/50 38, 45; L/50 B-13 **39**; L/52 32; L/55 36; L/57 **G32**; L/57 B-38 **G32**, 38; SK C/34 12, 14; TAZ (Tout-azimuth) 4, 6; 1870/93 **5**, 7, 30; 1884/17 6, 30; 1893/96 **5**, 6; 1970/93 6, 30; 1987/93 31
configuration 4, 6, 11, **45**
Corpo Italiano di Liberazione **30**, 31
Crimea 14, 18

designation 6, 7, 8, 11, 15, 25, 32, 34, 35, 40, **41**

Eisenbahnartillerie (Railway artillery) 12, 15
Eisenbahn-Artillerie-Abteilung (Stab) 15, 27
Eisenbahn-Batterie (Railroad Battery): E.655 8, **22**; E.674 8, 26; E.686 **B12**; E.690 **12**; E.692 **B12**, **20**; E.693 **6**, **B12**; E.695 **6**, **B12**; E.698 **16**; E.701 19, **23**; E.721 8, **C16**; E.722 **12**, **22**; E.749 **10**, **28**; 2./E.725 **20**, **E25**
elevation (degrees) 7, 15, 35
England 11, 19, 23
English Channel, the 16, 18, 23, 43, **44**
Essen 11, 14
Estonia 36, 37
Europe 23, 39, 43, 44

Far East, the 32, 35, 37, 40, **42**
Finland **G32**, **37**, **38**, **40**, **41**, 42
  Finnish army **35**, **36**
France 4, **5**, 6, 7, **A8**, **B12**, 14, **C16**, **20**, **26**, **28**, **30**, 31, 41, 43, 44
  French army 4, 5, **A8**, 43

Genoa **26**, **F28**, 30
Germany **5**, **6**, **7**, 8, **10**, 11, **B12**, 14, 15, 16, 18, 19, 20, 22, 23, **E25**, **26**, 27, 30, 31, 35, 37, 40, 43, 46
  German army **7**, 8, 14, 15, 20, 30
Gironde estuary, the 8, 26
Gl. (affût à glissement) 6
  274mm Gl. modèle 17 6, 7; 305mm Gl. modèle 06 6; 305mm Gl. modèle 06/10 6; 320mm Gl. modèle 70 7; 320mm Gl. modèle 70/30 6; 340mm Gl. modèle 93 6; 340mm Gl. modèle 12 6
Gneisenau, the **16**, 26
gun barrels 8, 11, **B12**, 14, 19, **E25**, 27, **37**, **42**
gun tubes **5**, 7, 8, 11, 12, 15, **24**, 25, 31, 34, 35, 41, 45
Gustav 14, 19, 23

Hanko **35**, **36**, **37**, 41, 42
Hanomag 11, 15, 25
Hitler, Adolf 14, 18
howitzers 8, **B12**, 27, 34, 43, **44**
  "Black Dragon" 44, 46; HMG *Boche-Buster* 43, **44**

intelligence 18, **E25**
Italy 6, 7, **E25**, 30, 31
  Italian army 227, 30, **31**; Italian navy **26**, **27**, **F28**

Japan 35, 40, **42**, 43

Kriegsmarine, the **5**, 7, 12, 26
Krupp 11, 12, 14, 15, 18, 25, 40

La Spezia **26**, 27, 28
Leningrad **7**, **B12**, 18, **G32**, **34**, 35, 37, 38, **39**, **40**, **41**
  Front 18, 19, **G32**, **39**; Leningrad Metallurgical Plant (LMZ) 32, **34**
Low Countries, the 16, 26

Maginot Line, the 6, 14, 16
Manchuria 35, 40, **42**, 43
Marseille **B12**, 26
Mediterranean, the 6, **16**, 19, **20**, 26
missiles 14, 15, 23, 40
  A-4 14; ballistic 4, 14, 19, 46; V-1 23; V-2 23
modernization 5, 10, 30
Montélimar pocket, the **10**, **B12**, **16**, **20**, **26**, **28**
mounts **5**, 12, 28, 30, 31, 32, 35, 36, 38, **39**, **40**, 41, 42, 43, 44, 45
  barbette 44, 45; Canet **34**, 35, 36; pedestal 4, **27**, **G32**, **34**, 37, 43; railway 4, 12, 31, **38**, 43, 45

Netherlands, the **A8**, **23**, 27
Normandy **22**, 23

operations: *Barbarossa* 18, 22, 37; *Dragoon* **B12**, 26; *Husky* **F28**, **30**

Pacific, the 37, 39, 45
Pas-de-Calais 11, 16, 18, 20, 23, **28**, 43
projectiles **7**, 8, 11, 14, 18, 19, 20, 23, 27, 34, 40, 46
  HE projectile fill (kg) 15, **25**, 35; HE projectile range (km) 7, 15, **25**, 35; HE projectile velocity (m/s) 7, 15, **25**, 35; HE projectile weight (kg) 7, 15, **25**, 35
propaganda **10**, 14

railway guns 4, **5**, 6, 7, **A8**, **10**, 11, **B12**, 14, 15, **C16**, 18, **D20**, **22**, 23, **E25**, 26, 27, 30, **31**, **G32**, **34**, 35, 36, **37**, 38, **39**, 40, **41**, **42**, 43, **44**, **45**, 46
  Bruno **A8**, **B12**, **C16**, 19, **20**, 27; Dora 14, 18, 19, **D20**, 23, 40, 46; K5 **10**, **19**, 27; Glatt 11, 27; K(E) (Kanone Eisenbahn) 8, 14, **15**; 453(f) 6; 486(f) **5**, 6, **E25**; 557(f) 6, 20; 558(f) **5**, 6; 591(f) 6; 592(f) **B12**, **20**, **26**; 593(f) 6; 651(f) **6**, **E25**; 674(f) 6, **7**; Dora 18, **19**, **D20**; Kurze Bruno **12**, **C16**; Siegfried 12, **16**; Theodor Bruno **22**, 26, 27; K5(E) 11, 12, 15, **C16**, **20**, 22, 23, **E25**, 27, **28**; K12 11, **23**; K12(E) 11, 15, 19, 23; K12N **10**, 11; K12(V) 11; L/58 12; Mk VI Mod 3A2 45, **46**; SKL (SK: Schnelladekanone) 8; SKL/40 **A8**, 10, **22**; SKL/45 10; TM-1-14 32, 34, 35, 37; TM-1-180 **G32**, **34**, **35**, **36**, 37, **41**, 42; TM-2-12 32, 34, 35, 37; TM-3-12 32, 34, 35, **37**, **38**, 41, 42; TM-8 31, **32**, 35, 37; TP-1 34
Raut (Railway artillery): 152/45-C Raut 41; 180/57-NI Raut **41**, 42; 305/52-O Raut 42
recoil 5, **6**, 32, **36**, 38, 40
recuperator 5, **24**, 41
Red Army, the **G32**, 38
Rhône valley, the **10**, **B12**, **20**, 26
Rhônetal **B12**, **20**
Rügenwalde 14, 18, 27
Russia/Soviet Union, the **6**, 18, 19, 31, **G32**, 34, 35, 36, **37**, **38**, 39, 40, **41**, **42**, 43, 46
  Russian Civil War, the 31, 32, **34**, 42; Soviet navy **D20**, 32, **34**, 36, 37, **38**, **39**, 42

Schneider 4, 5, **6**, 7, 27, 31, **42**, 43, 44
Sevastopol 18, 19, **D20**, 32
Sicily 19, 20, **27**, **F28**, **30**
St Chamond **5**, **7**, 43
St Petersburg 31, 41, 42

Torigni-sur-Vire **12**, **22**
traverse 16, 43, 44

US Army **10**, **12**, **22**, 26, 27, 44, 45, **46**

Vladivostok **34**, 35, 37, 40, 42
Vögele turntable **10**, **12**, **15**, **C16**, 20

Wehrmacht, the 18, 26
Westwall, the 6, 7
World War I 4, 5, **7**, 8, 10, 11, 14, **C16**, 27, 31, 43
World War II 4, 7, 15, 35, **45**, 46

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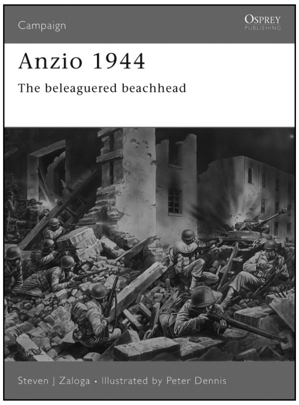

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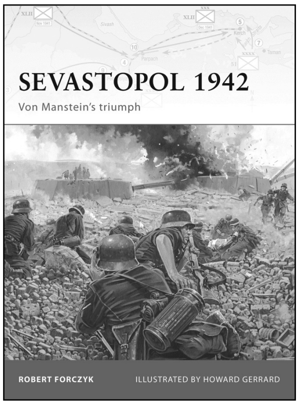

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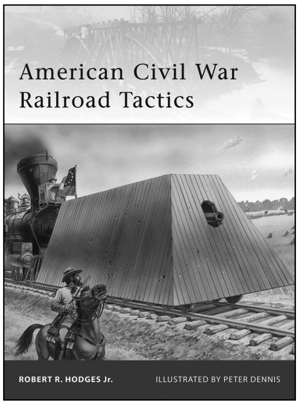

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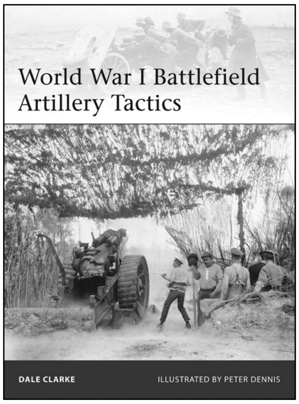

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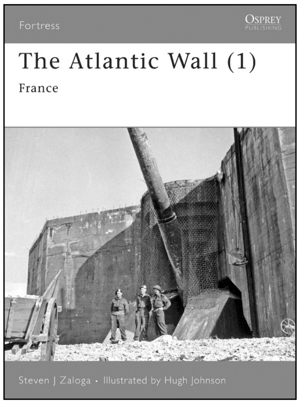

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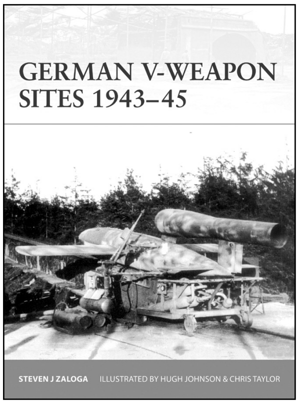

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